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NOTE ON THE PREPARATION OF OLEIC ACID AND THE OLEATES OF MERCURY AND MORPHIA.

To those of your readers who may have encountered the same difficulties as your correspondent, Mr. C. Rice, in procuring *pure* oleic acid and in preparing oleates of mercury and morphia, the following remarks may perhaps prove interesting. The process we here describe is one which we have adopted after meeting with the same difficulties as mentioned by that gentleman, in procuring oleic acid sufficiently pure for the preparation of the oleates in an acceptable condition, without liability to decomposition.

All the samples we have hitherto obtained, either from American or European sources, have proved to be more or less contaminated with oxyoleic and stearic acids; and it is perhaps owing to their presence, in a certain degree, that reduction of mercury has always followed their use; whilst oleates, prepared with the oleic acid obtained as we describe, have not in any instance precipitated, and are, moreover, unobjectionable as to color and appearance.

Any given quantity of almond oil* is taken and saponified by means of potassa, care being taken to insure the entire saponification of the oil, which may be easily tested by means of strong alcohol. The soap is then decomposed by means of tartaric acid, carefully washed to free it from bitartrate of potassa, etc.; then placed on a water-bath, and heated for several hours with half its weight of finely-powdered oxide of lead; the resulting combination, after cooling, is mixed with about

*We give the preference to this oil on account of its lesser liability to sophistication.

three times its volume of ether, and allowed to settle; the clear ethereal solution is decanted and the residue treated by a fresh portion of ether, and decanted as before. The mixed ethereal solutions are then briskly agitated with an excess of dilute hydrochloric acid, to eliminate the oleic acid, which rises dissolved in the ether to the surface of the water. The solution is next washed with water and distilled to recover the ether, which may be used for a subsequent operation.

The portion remaining in the still consists of oleic acid $C_{36}H_{33}O_3,HO$ contaminated with a certain quantity of oxyoleic acid $C_{36}H_{32}O_4HO + HO$. In order to free it from the latter, the mixture is saturated with solution of ammonia, and the resulting compound, decomposed by means of chloride of barium, which throws down a precipitate of oleate and oxyoleate of baryta. The precipitate is then dried and treated with boiling alcohol, which deposits, on cooling, crystals of oleate of baryta, without any trace of oxyoleate. The oleate is then decomposed by a solution of tartaric acid in *boiled* distilled water, which sets free the pure oleic acid. Care must be taken in washing this acid for the last time, and also in decomposing the oleate of baryta, to avoid contact with the atmosphere.

When thus prepared, oleic acid is nearly colorless and slightly thinner than almond oil; it dissolves readily both the binoxide of mercury and morphia, forming with them solutions varying from almost white (5 per cent.) to the color of linseed oil (10 and 20 per cent.) without giving rise to precipitates.

In preparing the oleates, the mixture should never be heated to more than 150° F., and the solution should be made in a closed vessel, in which the atmospheric air has been deprived of its oxygen or replaced by pure hydrogen; proper precautions being taken to allow for the expansion of the gas before entirely closing the apparatus.

New Orleans, La. F. & H.

NEW REACTION FOR CARBOLIC ACID.

By Charles Rice.

The following reaction for carbolic acid, which occurred to me some time ago, accidentally, is very decided and quite delicate.

Into a five-inch test-tube place about 10 grains of powdered chlorate of potassa, pour upon it strong hydrochloric acid to the depth of about one inch, and allow the action and evolution of gas to proceed for

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about one minute. Then dilute with 1½ volumes of water, and remove the gas contained in the upper part of the test-tube by blowing it out with a bent glass tube. It is advisable not to omit this precaution, since otherwise the subsequent addition of ammonia is frequently accompanied by a vivid flash of light. Pour upon the liquid in the tube solution of ammonia, without shaking, so that the latter will float upon the liquid to the depth of about a half inch, and remove the white clouds of chloride of ammonium by blowing gently through a glass tube as before. Now add a few drops of the liquid suspected to contain carbolic acid, by pouring it down the sides of the tube. If any be present, the upper previously colorless ammoniacal layer will assume a color varying from the darkest brown through all the shades of red brown, blood red, rose red, according to the quantity of carbolic acid present. The color appears first, either at the top, when much acid is present, or below at the point of contact of the two layers of liquid, when the quantity of acid is small, in the form of a colored ring. One part of carbolic acid in 12,000 may yet be distinguished. The same reaction is produced with creasote; but I have not been able to produce it with any other substance. In the meantime this test will no doubt prove useful as a negative one: the failure of the reaction proving the absence of a notable quantity of carbolic acid.

New York, Jan. 24, 1873.

GERMAN CHERRY JUICE.

By A. W. Miller, M. D.

This article is at present imported from Germany in large quantities, being manufactured principally in the vicinity of Magdeburg. It is obtained by expressing the common black cherries, which are there cultivated for this express purpose. In this country it is chiefly consumed by the compounders of liquors in a number of their preparations. Finding that it also can be advantageously employed for pharmaceutical purposes, it appeared to possess sufficient interest to warrant calling the attention of the profession towards it.

The importance of cherry juice to the liquor trade may be estimated from the fact that a single firm in this city imports annually from 350 to 500 casks, while the entries at the New York Custom House are at least 1500 casks per annum. Each of these casks, which are similar to those in which German wine is imported, contains from 150 to 200 gallons.

Cherry juice is a richly colored, dark red liquid; it is somewhat glutinous, but perfectly bright and clear. Its taste is rather pleasant, fruity, slightly acidulous and somewhat alcoholic. Without the addition of sugar it is rather too sour to be agreeable as a beverage. The specific gravity of a specimen examined was 1·041, but this, of course, may vary materially.

The importers state that its alcoholic strength ranges from 10 to 15 per cent. In order to arrive at a more definite figure in regard to the cask under examination, one gallon of it was subjected to fractional distillation, with the following results:

1st pint distilled contained 33½ per cent. of alcohol.
2d " " 12½ " "

Summing these up and reducing them to the full quantity, an average of 11½ per cent. is obtained. Allowing for a little loss, though, as the distillation was conducted carefully, this could not have been very great, it is probable that the proportion of alcohol was really about 12½ per cent., or one-eighth of the entire bulk. It may be here remarked that the article pays an *ad valorem* duty of 25 per cent., and as this is usually about 17 cents per gallon, the importers save the difference between this and the specific duty on the spirit which it contains, which would be 12½ per cent. of $2.00, or 25 cents per gallon. The above amount of alcohol seems to be sufficient to preserve the juice under ordinary circumstances, although it will occasionally ferment during the hot weather of summer, particularly when left in half-filled barrels.

As the importer's price for German cherry juice is usually rather less than $1.00 (gold) per gallon, this low figure is one of its main recommendations. This rate in reality is only about one-fourth of that which is usually paid for fruit juices put up in hermetically-sealed quart bottles. The small proportion of alcohol contained in the cherry juice cannot be held to detract from its merits, as it can readily be expelled by heat, and wherever the arrangements are such that it can be recovered by distillation, it will positively add to the money value, being worth nearly double that which has been paid for the article. The fact of the juice being perfectly clear and transparent, so that it will mix in all proportions with syrupy and alcoholic liquids without producing the slightest turbidity, is another important point in its favor. Besides this, the juice is always ready for immediate use, requiring neither filtering, straining nor any other troublesome and tedious pre-

paration, and it is not near so liable to spoil as solutions of cochineal. Indeed, it will be very difficult to find any other article, by means of which an equally beautiful tint can be given to elixirs, Curaçoa cordial or other elegant pharmaceutical preparations, and particularly in so convenient a manner.

Cherry juice seems also to be specially suited for the compound syrup of phosphates, with the coloring of which most manufacturers have heretofore had trouble. Used in the proportion of one ounce of juice in a pint of the syrup, it produces a brilliant claret red color, which is not affected by either muriatic or phosphoric acids, and which is neither precipitated nor bleached by exposure to the light. The fruity flavor imparted to the syrup, of course, is rather an advantage than otherwise.

Soda water syrups, prepared from strawberry and raspberry juice, particularly when it is a year old, have often less color than is desirable. While most druggists are reluctant to add anilin or any other artificial coloring matter, there can be no possible objection raised to the crimson tinted cherry juice, about four ounces of which will be found to be sufficient to bring one gallon of strawberry syrup up to the proper shade. Professor Parrish, in his "Practical Pharmacy," even highly recommends the admixture of black cherries with raspberries in the preparation of the syrup, and the same suggestion occurs in several French works. For enriching the color of raspberry syrup, eight ounces of cherry juice can be used advantageously to a gallon.

The following pharmaceutical formulæ illustrate some additional applications of cherry juice in the drug business. All of them have been thoroughly tested, and most of them have been in use for some time, having met with general approbation among the consumers:

Cherry Soda Water Syrup.

German Cherry Juice,	1 quart.
Water,	1 quart.
Best Crushed Sugar,	7½ lbs.
Citric Acid,	½ oz.

Boil in a porcelain capsule and strain. This yields a finely flavored and richly tinted syrup, which is much admired by the frequenters of the fountain.

Cherry Wine.

German Cherry Juice,	3 quarts.
Grape Sugar Syrup,	1 pint.
Simple Syrup,	1 pint.

This furnishes a cheap, palatable and gently stimulating beverage. Its taste resembles the best of the popular domestic fruit wines.

Cherry Jelly.

Cox's or Cooper's Gelatine	1½ drachm.

Wash with cold water, and add

White Sugar, ...	1 ounce.
German Cherry Juice, ...	½ "
Boiling Water, ...	5 ounces.

Stir until all the gelatine and sugar have been dissolved, and then set aside in a cool place to gelatinize. As a pleasant variation in the diet of invalids, this can be highly recommended. It is also occasionally quite acceptable as a dessert for the table.

Translated into the language of the kitchen, the above may be directed to be made by putting two heaped spoonfuls of Cox's gelatine into a coffee cup, washing it with cold water, adding a heaped tablespoonful of sugar and one tablespoonful of cherry juice, then nearly filling the cup with boiling water, and stirring until all is dissolved.

Imitation of the Syrup of Red Oranges of Malta.

(Sirop d'Oranges rouges de Malte.)

Simple Syrup, ...	1 gallon.
German Cherry Juice, ...	6 oz.
Essence of Curaçoa orange (containing 2 oz. of oil in a pint), ...	½ oz.
Citric Acid, ...	1 oz.

The quality of this syrup depends almost entirely on the purity and freshness of the essence of Curaçoa, which is difficult to obtain of good flavor. The syrup itself should be made in small amounts, as it is liable to be changed to an unpleasant rancid flavor on long exposure.

Imitation Strawberry Syrup.

Simple Syrup	1 gallon.
German Cherry Juice, ...	4 oz.
Tincture of Orris Root, ...	1 oz.
Citric Acid, ...	6 drachms.
Strawberry Flavor, ...	3 "

Imitation Raspberry Syrup.

Simple Syrup	1 gallon.
German Cherry Juice, ...	8 oz.
Tincture of Orris Root, ...	2 oz.
Citric Acid, ...	6 drachms.
Raspberry Flavor, ...	3 "

The compounders of liquors use cherry juice chiefly, if not exclusively, for manufacturing cherry brandy (known also as cherry bounce or guignolet), blackberry brandy and an imitation of Port wine. For the benefit of those who may be desirous of knowing the composition of these fancy liquors, which have a large sale in the South, the following receipts are appended, which have been obtained from trustworthy sources:

Cherry Brandy.

German Cherry Juice,	15 gallons.
Pure Rectified Spirits,	20 "
Simple Syrup,	5 "
Oil of Bitter Almonds,	1 drachm.

Rectified spirit is understood to be whiskey, which has been thoroughly deodorized by percolating through charcoal, and which is of first proof = 50 per cent. alcohol.

Blackberry Brandy.

German Cherry Juice,	3 gallons.
Pure Rectified Spirits,	25 "
Simple Syrup,	5 "
Clear Water,	5 "
Oil of Cinnamon,	1 drachm.
Oil of Cloves,	1 "

The oils are to be first dissolved in about a pint of alcohol, or high wine and then to be mixed with the spirits before the addition of the other ingredients.

Imitation of Port Wine.

German Cherry Juice,	15 gallons.
Pure Rectified Spirits,	10 "
Clear Water,	10 "
Simple Syrup,	4 "
Tincture of Rhatany,	1 pint.
Port Wine Ether,	2 ounces.

It is claimed that fictitious port wine is not at present manufactured in this country, as the same thing can be done abroad at a much lower figure. It is stated that ordinary port wine, which is not by any means the pure juice of the grape, can be imported for somewhat less than 70 cents per gallon. Under these circumstances, it is, of course, in the interest of liquor merchants to sell wines "strictly pure as imported" or "in bond," rather than to trouble themselves unnecessarily in compounding them here.

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COD LIVER OIL AND LACTO-PHOSPHATE OF LIME.

By Edward Childs.

This remedy is being quite extensively prescribed by physicians, and as considerable inquiry has been made as to an eligible mode of prescribing it, I will give my experience in the manufacture of the article, and also a simple process for making syrup of lacto-phosphate of lime.

For a long time I have had demand for a tasteless cod liver oil, and have been in the habit of preparing it in the form of an emulsion with gum arabic and water, and covering the odor with a few drops of essential oil of bitter almonds.

Over a year ago I found physicians were prescribing cod liver oil and lacto-phosphate of lime, and I devised a formula for it, based on my experience with the simple emulsion and the syrup of lacto-phosphate of lime, for which a considerable demand had sprung up. The formula I then devised has been followed by me up to the present time, and has invariably given satisfaction, and produces an article which does not separate or become rancid.

I think, however, it should be prepared extemporaneously as prescribed by physicians, and I have not kept it on hand, but prepare it as wanted, thus always giving a perfectly sweet article.

Take of Gum arabic,	℥ij ʒij.
Water,	fʒij.
Syr. lacto-phosphate of lime,	fʒvi.
Cod liver oil,	fʒviij.
Essential oil bitter almonds,	six drops.

Rub the gum, water and syrup together, until a smooth mucilage is made, then add the oil gradually with constant stirring, and, lastly, the oil of bitter almonds.

Thus made, each tablespoonful of cod liver oil and lacto-phosphate of lime contains four (4) grains lacto-phosphate of lime and 50 per cent. of cod liver oil. The gum in the above should be selected, ground and passed through a seive of 60 meshes to the inch. Cod liver oil and lacto-phosphate of lime, prepared in this manner, forms a preparation free from unpleasant taste and odor, and enables the practitioner to administer these valuable remedies without repugnance on the part of the patient.

Syrup Lacto-Phosphate of Lime.

Take of Chloride of calcium,	. . .	℥i.
Phosphate of soda,	. . .	℥iv.
Concentrated lactic acid,	. . .	℥i.

Dissolve the chloride of calcium and phosphate of soda separately, and mix the solutions; wash the precipitate and dissolve in the acid. Filter and mix with sufficient syrup to make two and one-half pints.

Philadelphia, Feb. 12th, 1873.

FORMULAS FOR TWO ELIXIRS.

By James W. Long.

Elixir of Quinia and Taraxacum.

℞

Vinum Quiniæ,*	. . .	O j
Ceylon Cinnamon, ground,		
Coriander,	. . . .	aa ʒ jss.
Aniseed,		
Caraway,	. . . .	aa ʒ ss.
French Brandy,	. . .	fl℥ ij.
Simple Syrup,	. . .	fl℥ v.
Fluid Ext. Taraxacum,	. .	fl℥ ij.
Cinnamon Water,	. . .	fl℥ iij.

Percolate through the aromatics the vinum quiniæ, following it with the brandy; next add the syrup and taraxacum without filtration, and lastly the cinnamon water through the filtering paper. Let the mixture stand three days, with frequent agitation, when filter again through paper.

When made strictly according to this formula, a cloud or precipitate will form with age. After repeated trials, I have been unable to remedy this without impairing the strength, but as this does not interfere with the taste, I regard it as of no consequence.

This Elixir has met with considerable favor from physicians, who have used it as a tonic and stimulant, and also made it a menstruum for either the administration of more quinia or other remedies.

Another very handsome and exceedingly palatable preparation is the

* The dose of quinia in this elixir can be regulated by the proportions of the wine, and the elixir can be made to contain any amount, from one to five grains in a tablespoonful, and still be palatable.

Elixir of Iron (*Ferri Pyrophosphas, U. S. P.*)

℞

Ferri Pyrophosphatis, grs. 160.
Dissolve in 6 fluid-ounces of water, by pouring from one glass vessel to another.

Add Spts. Vini Gallici,	iv.
And Vini Aurantii,	fl℥ ij.

Prepare a filter and place in it

Caraway,	ʒ ss.
Coriander,	ʒ jss.
Aniseed,	ʒ ss.
Grd. Orange Peel,	ʒ ij.
Ceylon Cinnamon, ground,	ʒ jss.

Filter the solution through the aromatics into a bottle having four fluid ounces of simple syrup in it, and add enough of the following mixture to make it measure one pint.

Vini Aurantii,	2 parts.
Spts. Vini Gallici,	2 parts.
Aquæ Destill.,	1 part.

Mix by agitation.

Each tablespoonful of the Elixir contains five grains of the iron salt. It will not become sour, and can be made in bulk to keep an indefinite time.

SELECTED FORMULAS FROM PHARMACOPŒA GERMANICA.

By the Editor.

Many of the numerous German practitioners residing in this country continue to prescribe preparations which are officinal in Germany, and are either little known to American pharmacists or differ in strength and occasionally in composition from similar ones officinal in our national Pharmacopœia. In the following selection, in which the nomenclature of the Pharmacopœia is retained, we shall endeavor to present to our readers the more important preparations, and to point out any difference in strength or composition. All the quantities given are in *parts by weight.*

Acetum aromaticum. Oils of rosemary, juniper and lemon, of each 1 part; oil of thyme, 2 p.; oil of cloves, 5 p.; tincture of cinnamon (Chinese cinnamon, 1 p., to 68 per ct. alcohol, 5 p.), 100 p.; aroma-

tic tincture (see formula below), 50 p.; dilute acetic acid, spec. grav. 1·040, 200 p.; distilled water, 1000 p. Mix, and after three days filter.

Note. The dilute acetic acid of the German Pharmacopœia is of about the same strength as the acetic acid No. 8 of our commerce.

Acidum aceticum aromaticum. Oil of cloves, 9 parts; oils of lavender and of lemon, each 6 p.; oils of bergamot and of thyme, each 3 p.; oil of Chinese cinnamon, 1 p.; glacial acetic acid, 25 parts. Dissolve by agitation.

Acetum Colchici. Colchicum seed, bruised, 1 part; alcohol, 90 per ct, 1 p.; pure vinegar (6 per ct. acetic acid), 9 parts. Digest for eight days, express and filter.

Acetum Digitalis and *Acetum Scillæ* are prepared in the same proportions, the latter requiring only maceration for three days and light expression.

Ammonium carbonicum pyro-oleosum. Carbonate of ammonium, 32 parts: Dippel's animal oil, 1. p. Mix thoroughly.

This preparation, sometimes prescribed as a powerful stimulant, is employed in making

Liquor Ammonii succinici. Succinic acid, 1 part; dissolve in 8 parts of distilled water, and neutralize with pyro-oleous carbonate of ammonium, 1 p., or q. s. After twenty-four hours filter.

Ammonium chloratum ferratum. To a solution of 16 p. chloride of ammonium in 32 p. water add 3 parts solution of ferric chloride (containing 15 per ct. of iron or 43·5 per ct. anhydrous ferric chloride). Evaporate to dryness in a porcelain vessel, with continued agitation, and rub the residue to powder.

Aqua aromatica, s. Aqua cephalica, s. Balsamum embryonum. Sage, 4 parts; rosemary, peppermint, lavender, of each 2 parts; fennel and Chinese cinnamon, each 1 part. The bruised materials are mixed with 26 parts alcohol and 130 p. water, macerated for 24 hours, and 72 parts obtained by distillation.

Aqua Cinnamomi spirituosa s. vinosa. Chinese cinnamon, 68 per ct. alcohol, of each 1 part; water, 10 parts. Distil 5 parts.

Aqua fœtida antihysterica, s. Pragensis. Galbanum, 8 p.; assafœtida, 12 p.; myrrh, 6 p.; valerian, 16 p.; zedoary, 16 p.; angelica, 4 p.; peppermint, 12 p.; wild thyme, 8 p.; chamomile, 8 p.; castor,

1 p. The bruised drugs are macerated for twenty-four hours with 150 p. of 68 per ct. alcohol, then 300 p. of water added, and 300 parts obtained by distillation.

Aqua Opii. Coarsely powdered opium, 1 part; water, 10 parts. Distil 5 parts.

Aqua vulneraria spirituosa s. vinosa. Peppermint, rosemary, rue, sage, wormwood, lavender, of each 1 part; 68 per ct. alcohol, 18 p.; water, 50 p. Macerate for two days, and distil 36 parts.

Ceratum Æruginis, s. viride, s. Emplastrum viride. Yellow wax, 12 p.; Burgundy pitch, 6 p.; turpentine, 4 p.; finely powdered verdigris, 1 part.

Ceratum myristicæ s. Balsamum nucistæ. Yellow wax, 1 p.; olive oil, 2 p.; expressed oil of nutmegs, 6 parts. Mix.

Cetaceum saccharatum s. præparatum. Spermaceti, 1 part, powdered sugar, 3 parts. Rub to a very fine powder.

Charta nitrata.—Bibulous paper, saturated with a solution of 1 p. nitrate of potassium in 4 parts water, and dried.

Charta resinosa, s. antirheumatica, s. antarthritica. Black pitch, turpentine, of each 6 parts; yellow wax, 4 p.; resin, 10 p. Melt together and coat paper with the mixture.

Cuprum aluminatum, s. Lapis divinus. Powdered sulphate of copper, nitrate of potassium and alum, of each 16 parts. Fuse them in a porcelain vessel, remove from the fire, and stir in a mixture of 1 p. each of powdered camphor and alum.

Elixir amarum. Extract of buckbean, extract of orange-peel, of each 2 parts; peppermint water, 68 per ct. alcohol, of each 16 parts; spirit of ether (made of 3 p. alcohol and 1 p. ether), 1 part. Dissolve and mix.

Elixir Aurantii compositum, s. viscerale Hoffmanni. Orange-berries, 6 parts; Chinese cinnamon, 2 p.; carbonate of potassium, 1 p.; Sherry wine, 50 parts. Macerate for eight days, express, strain and add 1 part of each of the extracts of gentian, wormwood, buckbean and cascarilla; dissolve, allow to settle, and filter.

Elixir e Succo Liquiritiæ. Purified liquorice (by exhausting with cold water and evaporating), 2 parts; dissolve in 6 p. of fennel water and add 2 parts of anisated ammonia.

The latter article, named

Liquor Ammonii anisatus, is made by dissolving 1 part of oil of anise in 24 parts alcohol and adding 5 parts water of ammonia.

Emulsio oleosa. Expressed almond oil, 2 p.; gum arabic, 1 p.; distilled water, 17 parts.

Emulsio Amygdalarum composita. Sweet almonds, 4 p.; hyoscyamus seed, 1 part; dilute bitter almond water (made by distillation, and containing $\frac{1}{200}$ per ct. HCy), 64 parts. Make an emulsion and add sugar, 6 p., and magnesia, 1 part.

Extractum Chinæ frigide paratum. The cold infusion of 2 parts of pale cinchona bark is evaporated to $1\frac{1}{2}$ parts; when cold, filtered, and evaporated to the proper consistence.

Extractum Ferri pomatum. The juice of 50 parts sour apples is by digestion saturated with powdered iron, and the filtered liquid evaporated.

Extractum Malti. 1 part of barley malt is macerated for three hours with 1 part of cold water; 4 parts of water are then added, the whole digested for an hour at a temperature not exceeding 65° C., then heated to boiling, expressed and strained. The clear liquid is evaporated with constant agitation, and the extract preserved in a cool place.

Extractum Malti ferratum. 95 parts extract of malt are mixed with 2 parts pyrophosphate of iron, previously dissolved in 3 parts of water.

Extractum Secalis cornuti, s. Extr. hæmostaticum, s. Ergotinum. 1 part of coarsely powdered ergot is twice macerated for six hours with 2 parts of distilled water; the mixed infusions are evaporated to the consistence of a thin syrup, to which 1 part of 68 per cent. alcohol is added, the mixture being filtered, after standing one day, and evaporated.

Extractum Strychni aquosum, s. Nucum vomicarum aquosum. 1 p. of coarsely powdered nux vomica is treated with 4 parts, afterwards with 3 parts of boiling water, and each time macerated for twenty-four hours. The strained infusions are mixed, evaporated to dryness and powdered.

Note. Aqueous extract of nux vomica is regarded to be about one-fourth the strength of the alcoholic extract.

(To be continued.)

GLEANINGS FROM THE EUROPEAN JOURNALS.

By the Editor.

Water in Volatile Oils.—George Leuchs observed that volatile oils, which have been obtained by distillation with water, contain water even if perfectly clear. On mixing them with petroleum-benzin, a turbidity is produced by the separation of water. The volatile oils of lavender, cloves, spike, cinnamon, rosemary, sassafras and juniper were found to contain water; also oil of lemon and bergamot. Mere traces of water were observed in Portugal and wintergreen oil, while the oils of turpentine, cedar, lemon, rue and amber were found free of water.—*Journal f. prakt. Chemie*, 1872, 159.

Process for bleaching the oils of rapeseed, poppyseed and flaxseed.—C. Puscher recommends to mix 100 kilograms of the oil with 2 kilograms of a mixture obtained from equal weights of 96 per cent. alcohol and sulphuric acid. The sulphovinic acid mixes uniformly with the oil, the mixture soon shows a green turbidity, which afterwards becomes black, and in 24 to 48 hours separates as a black sediment. Poppy- and rapeseed oils are now colorless, while linseed oil shows in thick layers merely a yellowish tint. The decanted oils require to be washed by agitation with hot water, to remove traces of sulphuric acid.—*Chem. Centralbl.*, 1872, No. 52, from *Bayr. Ind. u. Gew. Bl.*, 1872.

Corks saturated with paraffin are used for corking bottles containing alcoholic or caustic liquids. Ruschhaupt prepares them as follows: Paraffin is fused in a suitable vessel, the dry corks are added and immersed in the paraffin by means of a perforated cover or disc. The air is now easily expelled from the pores of the corks, which, after about five minutes, are removed and cooled; they may now be cut and bored like wax, are easily driven into the necks of bottles and readily removed, retain their smoothness and are gas-tight throughout.—*Apoth. Zeitung*, 1872, No. 50.

A new remedy for tooth-ache is recommended by Dr. Dop, who injects into the gum near the aching tooth some chloroform, of which two drops are usually sufficient for the severest cases. Occasionally a second injection becomes necessary, which is always successful.—*Ibid.*, 1873, No. 1, from *Revue med. de Toulouse*, 1872.

Glycerin lemonade in diabetes mellitus.—O. Schultzen recommends the following, which is to be taken during the day: Glycerin 20 to 50 grams, water 1000, citric or tartaric acid 5 grm.—*Ibid.*, No. 2.

Ferrous sulphate, precipitated by alcohol, was stated by Barckhausen* to contain less water of crystallization than the crystallized salt. L. Caro has analyzed this salt, and found it to contain seven molecules of water, the same as the crystallized preparation. By titration with permanganate, he found it of the same composition after a month's exposure to the atmosphere.—*Annalen d. Chem. u. Pharm.*, clxv, 29—32.

The water air pump.—Prof. R. Bunsen publishes a card, in which he states that the discovery of the fact that, by columns of liquids flowing downwards a more perfect vacuum can be obtained than by other means, belongs solely to Dr. Sprengel, who published his researches in the Journal of the Chemical Society January, 1865; in his paper on filtration under pressure, published in 1868, he gave due credit to the inventor.—*Ibid.*, 159, 160.

Oxalate of iron is recommended by Dr. Girard for medicinal purposes, and a report on this preparation, by M. E. Caventou, is published in *Journal de Pharmacie et de Chimie*, 1873, 61, 63.

This salt, which is now officinal in the United States Pharmacopœia, has been employed medicinally in this country for a number of years, and was first recommended by Dr. G. O. Schæffer, of Washington, D. C., in 1854. See Proceedings of the American Pharmaceutical Association, 1867, page 407, and 1869, page 389.

ON THE YIELD OF DRY MATERIAL FROM FRESH VEGETABLES.

By Dr. G. C. Wittstein.

The author gives in his Vierteljahres Schrift, 1873, p. 106, the following table, compiled from memoranda of his own observations made in 1828 and 1829. The yield is given for the air-dry material obtained from one part of the fresh.

* American Journal of Pharmacy, 1872, p. 163.

Flowers.

	Yield.	Collected in		Yield.	Collected in
Achillea millefolium,	$\frac{3}{10}$	July.	Primula officinalis,	$\frac{1}{5}$	May.
Convallaria majalis,	$\frac{1}{4}$	May.	Rosa gallica,	$\frac{1}{6}$	July.
Matricaria chamomilla,	$\frac{1}{4}$–$\frac{1}{5}$	June.	Tilia europæa,	$\frac{1}{3}$	July.
Papaver rhœas,	$\frac{1}{4}$	July.	Verbascum thapsus,	$\frac{1}{5}$	July.

Herbs and Leaves.

Achillea millefolium,	$\frac{1}{6}$	June.	Mentha crispa,	$\frac{1}{5}$	July.
Arnica montana,	$\frac{1}{5}$–$\frac{1}{6}$	May.	Mentha piperita,	$\frac{1}{4}$	July.
Artemisia absinthium,	$\frac{1}{4}$	July.	Menyanthes trifoliata,	$\frac{1}{5}$	May.
Atropa belladonna,	$\frac{1}{6}$	June.	Origanum majorana,	$\frac{1}{4}$	July.
Cnicus benedictus,	$\frac{1}{4}$	August.	Tanacetum vulgare,	$\frac{1}{6}$	June.
Conium maculatum,	$\frac{1}{7}$	June.	Taraxacum dens-leonis,		
Digitalis purpurea,	$\frac{1}{4}$	May.	(with the root),	$\frac{1}{6}$	May.
Erythræa centaurium,	$\frac{1}{3}$	July.	Tussilago farfara,	$\frac{1}{5}$	May.
Malva sylvestris,	$\frac{1}{3}$	June.	Veronica officinalis,	$\frac{1}{4}$	June.

Roots and Rhizomes.

Acorus calamus,	$\frac{1}{3}$	April.	Scrophularia nodosa,	$\frac{1}{6}$	May.
Arctium lappa,	$\frac{1}{7}$	May.	Symphytum officinale,	$\frac{1}{5}$	May.
Polypodium vulgare,	$\frac{2}{5}$	April.	Tormentilla erecta,	$\frac{1}{3}$	May.

Branches.			*Young Shoots.*		
Solanum dulcamara,	$\frac{3}{7}$	March.	Pinus sylvestris,	$\frac{1}{3}$	May.

STRIATED IPECACUANHAS.*

By M. Planchon.

It is known that writers on materia medica designate under the name of "striated ipecacuanha" emetic roots which are distinguished from other sorts of ipecacuanha by the longitudinal striæ that mark their surface. This kind appeared to be perfectly characterized and its history cleared up, when some years since there appeared a memoir by M. Vogl† upon the ipecacuanhas in the pharmacological collection at Vienna. While comparing the species described in that memoir with those in the collection of M. Guibourt, it appeared to me that the same name had been attributed to different species. A stri-

* Translated from the Journ. de Pharm. et de Chimie [4], xvi, p. 404.

† Vogl, Zeitschrift des oesterr. Apothekervereins; Wiggers and Hüsemann, Jahresb. d. Pharmacognosie, 1867, p. 64.

ated ipecacuanha which I met with about the same time at the Pharmacie Centrale of M. Dorvault confirmed me in the opinion that this question was worthy of investigation, and I engaged several of our students successively to deal with it in their inaugural theses. M. Georges Durand,* in examining the structure of various kinds of ipecacuanhas, pointed out that the striated ipecacuanha of Vogl did not correspond in its anatomical characters to those of the sort so named in the Guibourt collection. M. Thénot,† *préparateur* of natural history in the School of Pharmacy, went further, and showed that in the collection of the school there existed in reality two species of striated ipecacuanha differing considerably in their anatomical characters. This result was afterwards confirmed by M. Charles Menier,‡ who, passing in review all the true and false species of ipecacuanhas, submitted them to a microscopical examination.

It thus appeared from these researches that, under the name of striated ipecacuanha, writers have generally confounded two very distinct roots. It is to these species I therefore would wish to refer, in order to indicate their characters, investigate their botanical origin, and establish exactly their synonymy.

The two sorts are so different in their dimensions that they may be designated respectively the major and the minor striated ipecacuanha.

1. *The Major Striated Ipecacuanha.*—This ipecacuanha is met with in moderately long fragments, sometimes attaining a length of nine or ten centimetres. The diameter varies between five and nine millimetres. The fragments are sometimes rectilinear, sometimes sinuous, more rarely tortuous. At rather distant intervals they are marked by contractions or simply circular interstices. The whole of the surface is rather coarsely striated longitudinally. On the upper side the roots often bear the base of several stems, distinguishable by their much smoother surface. The color of this ipecacuanha is a tawny grey, tending sometimes towards a reddish-brown,

As in the other species of ipecacuanha, a section of this root reveals a cortical portion and a ligneous meditullium. The cortical portion is soft enough to allow of its being marked by the finger nail.

* Etude des différentes racines d'Ipécacuanha du Commerce (Thèses de l'Ecole de Pharmacie de Paris, 1870).

† De la Cellule Végétale; de son importance au point de vue de la matière médicale (Ibid., 1870).

‡ Des Ipécacuanhas (Ibid., 1871).

It has a horny appearance, and is rather variable in color, being sometimes whitish, and passing by shades of rose and violet to a violet black. Its thickness is relatively considerable, at least two thirds of the radius, and it becomes still more so when the root is placed in water, which causes it to swell freely. The meditullium is of a yellowish-white color. The odor of the root is not very marked. The taste is scarcely nauseous, being sometimes insipid and frequently sweetish.

A microscopical examination of the cortical portion shows beneath five or six layers of tubular cells, with brownish walls, a parenchyma formed of large polygonal cells. These cells become smaller as they approach the ligneous meditullium; they become pretty regularly hexagonal, and form series radiating almost rectilinearly. They are entirely free from starch; a certain number of them contain bundles of raphides, and all are filled with an amorphous substance soluble in water, and capable of reducing cupro-potassic solution. The ligneous meditullium consists of fibres with incrusted sides arranged in radiating series, between which are interposed vessels with very narrow openings, not exceeding the diameter of the ligneous fibres. It contains no trace of starch.

The salient characters resulting from this examination, and which may be regarded as distinctive from those of the second species of striated ipecacuanha, are (1) the complete absence of starch, (2) the relatively small diameter of the vessels of the meditullium, (3) the presence of a principle capable of reducing the cupro-potassic reagent. This matter exists in very great quantity in the cortical portion; a simple digestion in water giving a liquid with strong reducing power, but which does not exercise a deviating influence on a ray of polarized light. This substance merits a closer study.*

The major striated ipecacuanha comes from New Granada. It contains but very little emetina; at least so it would appear from the analyses made by M. Dorvault, which confirmed those made by Prof. Attfield,† who attributed to it two and a half per cent. of active principle.

* Professor Attfield has noticed the presence in this root of 5·39 per cent. of grape sugar, and 34 per cent. cane sugar, or of substances soluble in water and capable of being converted into sugar by boiling with an acid (Pharm. Journ., second series, vol. xi, p. 141).

† Loc. cit.

2. *Minor Striated Ipecacuanha.*—This sort is distinguished from the former by its much smaller dimensions. It is in very short fragments, two or three centimetres or more. Some nearly cylindrical, scarcely constricted, are only two or three millimetres in diameter; others are narrowly fusiform; others again are formed of cylindrical or pyriform segments placed end to end; these are generally thicker and attain a diameter of five or six millimetres. The general color is a grey-brown, darker than that of the first sort. The longitudinal striæ are fine and regular. In a transverse section the cortical portion is as horny and the consistence closer than in the major kind. The meditullium is yellowish, marked with a great number of pores, visible with a glass.

The microscope shows in the cortical portion—(1) a first zone, formed of from seven to nine layers of very narrow tubular cells; (2) a thick parenchyma formed of cells with irregularly sinuous walls, filled with starch, and containing here and there bundles of raphides; (3) a liber zone, in a transverse section of which are seen narrow polygonal fibres and cells ranged in radiating series. The ligneous meditullium is distinguished immediately by the dimensions of the vessels, which give a porous appearance to this part, and which stand out distinctly by their size from the woody cells surrounding them.

The salient microscopic characters of this species are (1) the presence of starch, (2) the relative development of the liber zone, (3) the size of the vessels in the middle of the woody layer.

This sort of striated ipecacuanha contains a much larger proportion of emetina than the preceding: nine per cent., according to the analysis of Pelletier;* six and a half per cent. of pure emetina, according to Attfield.†

It will be seen that the two preceding species are perfectly distinct in some of their anatomical characters. Let us try and complete their history, profiting by the data above given.

First, what is their botanical origin? It is known that writers on materia medica have referred the striated ipecacuanha to a New Granada plant, sent by Mutis to Linnæus, and described by him under the name of *Psychotria emetica.* Which of the two commercial kinds of striated ipecacuanha are obtained from this species? An examination of the roots ought to clear up this question. M. Triana, on the one hand, and M. Posada, on the other, have kindly furnished me

* Journ. de Pharm., vol. vi, p. 261.

† Pharm. Journ. [2], vol. xi, p. 141.

with specimens of these roots, taken from the living plant. These specimens, coming from different sources, have both the outward appearance and anatomical structure of the major striated ipecacuanha. So that in this respect the question is completely settled.

As to the origin of the second sort, I am obliged to remain in doubt. Its structure appears to differ too much from that of the roots of *Psychotria* to allow of its being referred to a species of the same genus. It presents anatomical characters approaching to those of the white or undulated ipecacuanha, which is referred to *Richardsonia scabra*, St. Hil.; and I should not be surprised if it were to a plant of this genus, or at least of a very near genus, that this commercial sort owes its origin. I incline the more to this opinion, since some specimens appear, as it were, intermediate between the minor striated ipecacuanha and the undulated ipecacuanha. I have in my possession some fragments sent to me by Mr. Hanbury, labelled "Spurious Ipecacuanha.—*Richardsonia scabra.*" Now, the smallest of these fragments recall the minor striated ipecacuanha, whilst the larger approach more nearly undulated ipecacuanha. But I will not dwell further upon a point which at present can only be matter for conjecture.—*Pharm. Journ., Lond., Jan.* 4, 1873.

THE MANIOC, OR TAPIOCA PLANT.*

By M. Paul Sagot.

Tapioca is obtained from the Manioc, or Cassava, a suffrutescent plant belonging to the Order Euphorbiaceæ, which has long been cultivated by the indigenous Indians of Guiana and intertropical America. It is the *Jatropha Manihot* of Linnæus, and the *Manihot utilissima* and *Manihot Aipi* of Pohl. By the Indians it is known under various names; the Caribs call it *Kière* and *canhim;* the Galibi, *Kie ray;* the Arrouagoue, *calôli.* In the Antilles, the Spanish colonies, New Granada, Peru, and Pará it is called *yuca;* in Brazil *mandiocca* and *maniba* and *aïpi* (sweet manioc); in Mexico it is called *tziim.* A great number of varieties have been observed under cultivation, each of them permanent, although sometimes closely resembling another variety, and each distinguished by some particular quality. Botanists have not yet met with any form of the cultivated manioc in a wild

* Abstracted from a paper read before the Société Botanique de France, Dec. 18th, 1871 (Bull. de Soc. Bot. Fr. xviii, 341).

state; but in Brazil, Guiana and Venezuela many undoubtedly spontaneous species of the genus *Manihot* exist, and some of them resemble the cultivated varieties very closely. The province of Goyaz in Brazil produces the largest number of species, and amongst those offering the closest points of resemblance are *M. pusilla*, *M. flabellifolia*, *M. digitiformis* and *M. triphylla*. Pohl describes the sweet (non-poisonous) manihot (called *Aïpi* in Brazil, *M. Aïpi*, Pohl), as a distinct species from the poisonous manihot (*Yuca brava* or *Mandioca brava* of the Spanish and Portugese colonies); but the author agrees with Goudot in thinking that they are only varieties of the same species.

The manioc or cassava plant is propagated by cuttings which grow with extreme facility. The plant appears at first as a straight stem, furnished with large digitate leaves, with about seven lobes. At the age of from six to ten months, and when from one to two metres high, it throws off from its summit lateral branches, with smaller leaves, and shortly afterwards bears flowers. The root then commences to develop several elongated amylaceous tubers, which continue to grow underground as long as the branches yield leaves and flowers. At the end of a year and a half or two years the roots are ready for collection; but if not wanted may be left in the ground for some time, provided they be watched that they do not rot. On the other hand, they may, if required, be gathered earlier, but the yield is not so good. The stalks, which are planted about a metre apart, usually produce two or three tubers, varying in size and weighing together from one to three kilograms. The plant is not very choice as to soil, but flourishes most in freshly cleared ground, and prefers well-drained spots, an excess of moisture causing it to rot. Although living for two or three years, the plant is not strictly a perennial, since it becomes gradually exhausted as the tubers attain their full size. The sweet manihot is usually gathered earlier, since the root becomes hard and bad if left to develop too much.

The yield of the manioc root, considering the time it occupies the ground, when compared with other farinaceous roots is not great; but on the other hand, it contains less water than any other starchy root; —when mature, less than sixty per cent. Its texture is very dense and compact. It contains much starch, and its richness in albumen and other nitrogenized matters is estimated at two per cent. In converting the roots into an edible flour, they are scraped, peeled, and

then washed; next they are rasped upon a wooden plank armed with small iron teeth, and the pulp is left twenty-four hours, by which time a slight fermentation is set up. It is then placed in a long, flexible basket, called a *couleuvre*, usually made of plaited rushes. The *couleuvre* is suspended by a handle at its open end, and a heavy weight is attached to the other end, by which means the sides are compressed together, and a slightly opaline aqueous juice, which is highly poisonous, is caused to ooze through the plaits. The pressed meal is then taken out and exposed for some time over a fire; afterwards pounded, coarsely sifted and roasted on a brass plate over a fire to upwards of 100° C., care being taken by constant renewals to prevent scorching. Sometimes during the roasting it is stirred to and fro with a small rake of wood or metal; it is then formed into small hard grains, having the appearance of semolina, which are called *couac*. When *cassava* is to be prepared, the meal is more carefully pounded and better sifted. It is then spread circularly upon the plate, pressed slightly with a pallet knife to cause it to aggregate and turned two or three times during the roasting. In both operations there is complete cooking and desiccation effected, which enables it to be kept an almost indefinite time. The aggregation of the meal is caused, not by the addition of water, but by the action of heat, softening and agglutinating some of the particles of starch.

M. Sagot considers the manioc to be healthy food, although of small nutritive value. Dr. Schier estimates it to contain 0·18 per cent. of nitrogen, but little phosphorus, and a very small quantity of fatty matter. The indigenous tribes, who make it the basis of their food, supplement it with a good quantity of fish and meat.

In the preparation of tapioca, the root is rasped and diluted with water, in which it is well worked up; the grosser parts are removed and the finer allowed to be deposited by subsidence in the water. In this form it is imported into this country in considerable quantities as Brazilian arrow-root. The tapioca is produced by roasting this starch on metal plates, stirring it the while with an iron rod; the starch grains burst, some of the starch is converted into dextrin, and the whole agglomerates into small irregular masses.

In Demerara, the manioc juice, deprived by boiling of its injurious properties, is used under the name of *cassareep*, as a sauce for the table. Besides this, the Indians use the root of the manioc to prepare fermented drinks, which, however, would hardly suit European tastes.

It is probable, M. Sagot thinks, that the poison present in the manioc is an instable organic compound, hurtful in itself, but especially dangerous from the fact that, under certain conditions, it will engender hydrocyanic acid. The leaves when bruised exhale a smell of bitter almonds, and the presence of prussic acid in the roots has been established. This he considers to explain the fact that while the manioc water, especially when distilled, is very poisonous, in Guiana and Brazil the Indians, after boiling it and removing the scum, use it as a beverage. Although wild animals, too, are sometimes poisoned through eating the leaves, sometimes they are not; this, he thinks, occurs when, a small quantity being eaten, the gastric juice exercises an energetic action before hydrocyanic acid can be developed.

The sweet cassava, or Camanioc, contains so small a quantity of acrid principles that the roots are cooked at a fire and eaten like potatoes. It is a rapid growing variety, becoming ripe in five or six months, and in two or three months more the roots become hard and unfit to eat. The bark of the stalk is white, the petioles of the leaves are of a fine purple-red color, and the luxuriant leaves at the foot of stalk are 7-partite. The tubercles are long and of small diameter; when cooked in the ashes of a fire they are agreeable to the taste, sweet and of a fine consistence.—*Pharm. Journ.* (*London*), *Jan.* 18, 1873.

THE NEW THEORY OF FERMENTATION.

The indefatigable Pasteur again comes upon the stage with a series of experiments to prove the accuracy of his theory of fermentation. He claims that grape juice, when exposed to the action of the air, or of oxygen, never of itself alone undergoes alcoholic fermentation, but that this only happens when those particles of dust, or germs of ferment, which are present both in the grape and the woody stem, are introduced into the must.

The method of experimenting is very simple in theory and perfectly convincing. It is as follows:

Forty glass bulbs were taken, with tubes bent downward to prevent dust falling into them. On the side was a neck fitted with rubber tubing and glass stopper, through which at a given moment the material could be introduced.

These 40 bulbs were filled with an easily fermentescible substance which had been previously boiled, and were divided into four series,

of 10 flasks each. Those of the first series contained nothing but the above-mentioned easily fermentescible liquid; the bulbs in the second series had added to this fermentescible liquid a few drops of must or grape juice, taken from the interior of the grape in such a manner as not to come into contact with the dust on the outside of the grape. To the fermentescible liquid in the bulbs of the third series was added a small quantity of the water in which the grapes and stems had been washed and afterwards boiled. To the liquid in three of the fourth series was added some of the water used to wash the grape, and which contained the dust and germs, but had not been boiled. When these preparations were completed, the bulbs were left to themselves and to the action of the surrounding air, in a room of a suitable temperature, or in a bath artificially heated to the temperature most favorable to fermentation.

The result is very surprising, for it was found that the liquid in the first three series, with rare exceptions, had not undergone fermentation; but in the 10 bulbs of the fourth series a very violent fermentation had taken place.

To Pasteur belongs the uncontested honor of being the first to discover that the organisms, in nature, are divided into two classes:

The first class consists of germs visible to the naked eye, and in order to live they require oxygen either free or combined.

The second class embraces microscopic organisms, such as germs of ferment; oxygen acts as a poison on these, but becomes a source of life if derived from a compound like carbonic acid.

It has long been a well-known fact that, in fruits taken from the tree and exposed to the air, the vital process goes on in the ordinary manner; they absorb oxygen from the surrounding air and give off carbonic acid. They ripen because the saccharine matter is produced in them without undergoing fermentation.

This premise being established, Pasteur took some fruit, namely, a peach and a plum, and placed them under a bell jar containing carbonic acid; the fruit lost its vitality—its whole life, outer and inner, ceased, because it could not take up and assimilate oxygen from the atmosphere surrounding it. The fruit began another and a new life, which developed itself outward from the interior, and is, so to speak, similar to the life of the atoms, in the sense that the cellular tissue takes away the necessary oxygen from the saccharine matter and other substances present, in the manner of a perfect alcoholic fermen-

tation. The fruit gets soft, it becomes wet through continually, and, if distilled, pure alcohol is obtained and carbonic acid becomes free.

Pasteur repeatedly recurs to these facts, for they are the basis of a discovery of endless importance, and are of greater weight because they will form the connecting link between theories at present opposed to each other.

At the first glance we might suppose that this second discovery was a contradiction of the first, and that the views of Liebig and Fremy—that ferment germs and fermentation itself develop spontaneously in organisms of themselves, without any action from without—were correct; but Pasteur insists that he will soon complete his observations and make all clear.—*Journ. Applied Chem., Feb.*, 1873.

THE AMOUNT OF CAFFEINA CONTAINED IN COFFEE, AND ON ITS PHYSIOLOGICAL ACTION.

By Hermann Aubert.

Although the quantity of caffeina contained in raw coffee is known, no attempt has ever been made to ascertain how much of the alkaloid is contained in a cup of coffee, and it is also uncertain whether the beans should be slightly or strongly roasted, and whether the ground coffee must be boiled to extract its active principles or simple infusion is sufficient. By extracting the coffee with water, either by percolation or decoction, and evaporating to a syrup, which is then treated from five to eight times with chloroform at nearly 60° till all the caffeina has been dissolved out, he obtains a larger quantity than previous experimenters. Raw beans of the yellow Java kind yielded 0·709—0.849 per cent. by this method, while they gave only 0·474 by Garot's method of precipitation with basic lead acetate. When much roasted, coffee loses a certain quantity of caffeina which sublimes, whereas it loses none by slight roasting. Notwithstanding this, the coffee made in the usual way by percolation from strongly roasted coffee contains rather more caffeina than that made from an equal weight of slightly roasted coffee, as the roasting renders it more easy to extract.

When coffee is prepared in the usual domestic fashion by pouring six to ten times its weight of boiling water three or four times over ground coffee, nearly the whole of the caffeina is extracted, hardly one-fifth of it remaining in the grounds. The quantity of caffeina in a cup of coffee prepared from 16⅔ grams of coffee is about 0.1 to 0·12

gram. A cup of tea prepared in the ordinary way from 5-6 grams of Pekoe tea contains also about 0·1 to 0·12 grams of caffeina. Caffeina acts upon the spinal cord and causes tetanus in doses of 0·005 gram for frog, injected subcutaneously; for a rabbit, 0·120 gram (injected into the jugular vein); for cats, 0·200, injected in the same way; and the same quantity for dogs. It has a peculiar action on the muscles of frogs, especially when directly applied to them, causing them to become rigid and white, apparently from coagulation of the myosin. It does not exert this action on the muscles of mammalia. The tetanus is removed by artificial respiration, and if this process is kept up for about a quarter of an hour, no recurrence of the tetanus takes place, even though the respiration is then discontinued, showing that the caffeina is quickly eliminated or destroyed in the organism. Occasionally it produces a paralysis of the hind legs in rabbits, but the author is uncertain to what cause this is to be attributed. It quickens the heart and at the same time reduces the blood pressure. The effect he believes to be due to stimulation of the cardiac ganglia, combined with diminution of what he regards as cardiac *tone*, due to paralysis of the nerves passing from these ganglia to the muscular substance.

The action of caffeina does not explain the stimulating and reviving action of coffee.—*The Pharm. Journ. and Trans., Dec.* 21, from *Journ. Chem. Society.*

RESEARCHES UPON SANTONIN.*

By M. L. De Saint-Martin.

Santonin is the active principle of *Semen contra*, and has been prepared for some years past, upon a large scale, for therapeutic use. The reactions of this principle have, however, as yet been little studied. It remained outside any methodic classification until Berthelot, in his *Traité Elémentaire de Chimie Organique*, included it in the grand class of organic compounds which in 1860 he instituted under the name of phenols. The author, therefore, undertook an investigation in order to ascertain its chemical relations. The investigation included its reactions with reducing, oxidizing and decomposing agents; but the present paper only deals with some reducing experiments.

* Memoir read before the Académie des Sciences, Nov. 11th, 1872 (Comptes Rendus, lxxv, 1190).

If santonin be really a phenol, its formula $C_{15}H_{18}O_3$ indicates that it should be possible by its methodical reduction to obtain—

(1) A diatomic phenol ($C_{15}H_{18}O_2$);

(2) A monatomic phenol ($C_{15}H_{18}O$);

(3) A carbide of hydrogen ($C_{15}H_{18}$).

This last carbide would present the composition of a homologue of naphthalin, isomeric or identical with amylnaphthalin.

The author has succeeded in obtaining the monatomic phenol ($C_{15}H_{18}O$); and he hopes to obtain shortly the other terms of the series.

The monatomic phenol, to which compound the author has given the name of santonol, was obtained by introducing into a long green glass tube, between two plugs of asbestos, a mixture of one part of santonin and four parts of zinc in powder, and heating it over a gas stove, in a current of hydrogen. A thick yellowish-brown liquid condensed in the cool parts of the tube, which, after a few days, was full of crystals. This crude product was neutral to litmus, insoluble in water, very soluble in alcohol and ether; treated with solution of potash in suitable proportions it dissolved completely. An excess of potash separated, under an oily form, potassic santonalate. This compound, or an analogous body very rich in potash, was also precipitated as an oily liquid when the original solution was diluted with pure water. Treated with an acid it reproduced santonol. These properties, and various others undescribed, show that the product was constituted by a body analogous to the phenols.

But the crude product of the reaction was not a pure substance. In fact, the crystals and the mother-liquor presented a different composition. The first answered nearly to the theoretical formula $C_{15}H_{18}O$, while the mother-liquor contained much less carbon, perhaps because of the presence of the compound $C_{15}H_{18}O_2$, intermediate between santonol and santonin. The crude product was therefore redistilled, which operation was effected without difficulty at about the boiling-point of mercury. The distilled liquid still separated into two portions, the one crystallized, and the other liquid; these were analyzed separately, and found to be isomeric.

The crystallized santonol had the appearance of the stearin which separates in the fatty bodies. After being purified as much as possible by pressure, it acquires a tolerable degree of hardness. Its fusing-point was about 135° C. It was insoluble in water, very soluble in alcohol and ether. Sulphuric acid formed with it a compound

sulpho-acid, of which the salt of baryta was soluble. Analysis gave—

	Found.		Calculated.
C . . .	83·9	83·8	84·1
H . . .	8·8	8·9	8·4
O (difference) .	7·3	7·3	7·5
	100·0	100·0	100·0

The liquid santonol was a very unstable substance, which turned brown under the influence of the air. Like its solid isomer, it was insoluble in water and very soluble in alcohol and ether. Its properties are difficult to define individually, because it was evidently saturated with solid santonol. Analysis gave—

	Found.	Calculated.
C	84·1	84.1
H	8·9	8·4
O (difference) . .	7·0	7·5
	100·0	100·0

The author is continuing his investigations of this body, and of the other derivatives of santonin.—*Pharm. Journ. and Trans., Dec.* 28, 1872.

IODIZED ALBUMEN AND IODIZED ALBUMEN WITH FERRIC CITRATE.

Professor Luigi Guerri, of Florence, has been studying the question whether it be possible to employ the white of egg to prevent the decomposition of ferrous iodide, and to obtain a combination which should contain one part of iodine to five parts of oxide of iron. In order to investigate the action of iodine upon albumen, Professor Guerri saturated it with dilute phosphoric acid, collected the liquid, evaporated the solution of albumen to 3° Beaumé, and afterwards added finely divided iodine, obtained by precipitating tincture of iodine with water. This caused the albumen to turn red, but after some time, when stirred, it regained its primitive color. These changes of color occurred repeatedly after additions of iodine, until at length the red color remained persistent and mucilage of starch was colored blue. When this point was attained the liquid was agitated, and, after stand-

ing ten or twelve hours, it again regained its original color; it then no longer gave the reaction with starch, except under the influence of chlorine water or nitric acid containing hyponitric acid. Even these were not sufficient to set free some portion of the iodine, it being necessary to incinerate with potash in order to obtain it in the state of iodide of potash. Professor Guerri found afterwards that even during the evaporation of the albumen to dryness the iodine remained in combination, and that during the process some white flakes appeared, which separated upon standing, and redissolved in a very small quantity of potash.

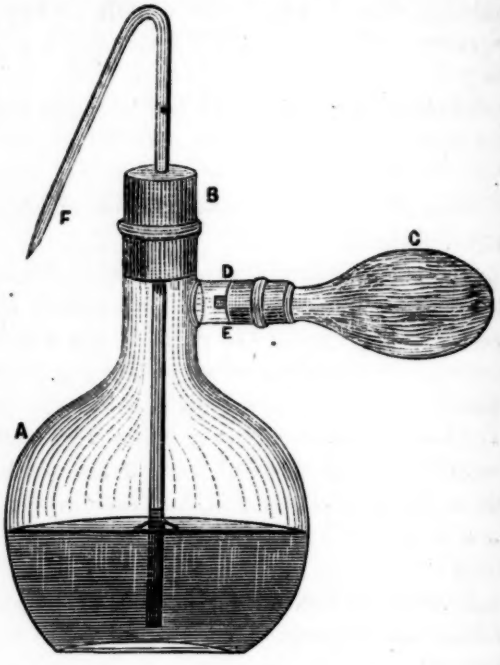
According to careful experiments of Professor Guerri, 100 parts of this iodized albumen, that had been dried at 60° C., contained 3·132 parts of iodine; and 474 parts of solution of albumen of 3° Beaumé density, when so evaporated yielded 31·928 parts of iodized albumen, whilst 31·928 parts of iodized albumen contained 1 part of iodine. The iodized albumen forms yellow transparent scales, soluble in water, with the exception of a few flakes which are not dissolved by acetic acid or phosphoric acid, but are dissolved by alkalies. The solution is precipitated by alcohol, is neutral, and gives no iodine reaction.

In order to obtain a ferruginous preparation of the strength before mentioned, Professor Guerri dissolved 18 parts of ferric citrate—corresponding to five parts of ferric oxide—in 474 parts of solution of albumen 3° Beaumé density, previously iodized, and evaporated the solution at a temperature of 60° C., to dryness. This gave 50 parts of a compound containing one-third of ferric citrate and two-thirds of iodized albumen. The product so obtained has the appearance of ferric citrate, but is a little yellower. The solution comports itself similarly to the iodized albumen. The iron is not separated from it by alkalies, or by ferrocyanide of potassium, but is separated by the alkaline sulphides.

Each of these preparations is easily formed into a pill mass with simple syrup, as well as with extracts not containing much tannic acid. They can also be administered in powder.—*Pharm. Jour. and Trans.*, *Dec.* 14, from *L' Union Pharm.*, 1872, 289.

LAND'S IMPROVED ATMOSPHERIC WASHING BOTTLE.

We present a cut of an improved form of 'Washing Bottle,' for the use of analytical chemists. It may be described as follows:



A flat bottom Bohemian flask, A (of about one litre capacity), has a branch opening, D, on its neck, as represented; into the mouth of this opening is inserted a caoutchouc stopper, E, through which a piece of strong glass tube projects (for one inch), at its outer end; over this tube the india-rubber syringe bulb, C, is slipped, and secured by binding with wire or twine.

The glass tube or 'jet tube,' F, passes in the usual manner through the larger india-rubber stopper, B, and extends nearly to the bottom of the vessel. When using the bottle it is supported by placing the middle or second joint of the index finger under the lateral tube at E while the bulb, C, comes into the palm of the hand, and may be pressed to the desired extent, forcing a fine stream of the distilled water from F with any required force. Upon relieving the bulb of the pressure, it takes air through the tube F very quickly.

This improved bottle obviates the inconvenience of blowing with the mouth (which often contaminates the water), and it furnishes a fine stream of water, perfectly under the control of the operator. Its convenience and cleanliness must yet be universally acknowledged. This form of bottle was devised by Wm. J. Land, analytical chemist, Atlanta, Ga., more than five years ago; he has had several of these bottles in constant use ever since, and makes known its merits at the

suggestion of several professional friends. Any chemist can easily construct the apparatus, or it may be purchased of dealers in chemical apparatus.—*Amer. Chemist, Dec.*, 1872.

DETECTION AND ESTIMATION OF PARAFFIN IN STEARIN CANDLES.

By M. Hock.

Makers of stearin candles mix paraffin with the fatty mass in quantities up to 20 per cent. Paraffin candle makers also mix stearic acid with their paraffin, and attribute valuable properties to such a mixture, so far as candle-making is concerned. The attempt to determine if paraffin be present, and if so, to get some approximate idea of the quantity, in a sample of stearin and *vice versa*, by means of the comparison of the melting-point and specific gravity of such a mixture, is shown to be useless, as these vary according to the source from which the paraffin is obtained, as also in the case of the stearic acid, since the pure commercial article is by no means a chemically pure article.

A good method of detecting the presence of stearic acid in paraffin has been devised by R. Wagner, viz., by treating a boiling solution of the paraffin in alcohol with an alcoholic solution of neutral acetate of lead, when, if stearic acid be present, a dense floccular precipitate appears, but none if it be absent. The best method, and one which can be used quantitatively as well as qualitatively, is described as follows:

Not less than 5 grms. of the candle are taken and treated with warm solution of hydrate of potash, which must not be too concentrated. A soap is formed with the stearic acid, whilst the paraffin is left unaltered. Salt is thrown into the solution, whereby the soap is separated out as a soda soap, and in precipitating takes down the paraffin with it. The soap obtained is thrown on the filter and washed with cold water or very dilute spirits of wine. Thus, firstly, the salt is washed out, and, finally, the soap is brought into solution and likewise washed through the filter, leaving the paraffin, which is then dried at a temperature below 35° C., so as not to fuse it. The paraffin is then treated on the filter with ether, and after repeated washing with this solvent, the ethereal solution is carefully evaporated in a weighed porcelain crucible, in the water-bath, at a low temperature.

The residue, consisting of the paraffin, is then weighed, and the stearic acid is estimated by difference.—*Chem. News, Lond., Jan.* 10, 1873.

EXPLOSIVE MIXTURE OF NITRATE OF POTASH AND ACETATE OF SODA.*

By M. Violette.

An accident in the author's laboratory made known to him a singular reaction between nitrate of potash and acetate of soda, which, under the influence of heat, constitutes an explosive mixture equal in force to gunpowder. In some researches upon saltpetre he had heated moderately in a small phial a few grams each of nitrate of soda and acetate of soda, both previously fused and anhydrous. The two salts melted formed a colorless and transparent liquid, which gave off a few gaseous bubbles. At the same moment, a violent explosion occurred, accompanied by flame and smoke, which scattered the phial in fragments all over the laboratory; a fresh gaseous combination between the elements of the salts had taken place, leaving a slight residue of alkaline carbonate.

In repeating the experiment a gram of nitrate of potash was melted in a small platinum capsule at a gentle heat, and a gram of acetate of soda previously fused added to it. At a temperature of about 300° C. the mixture remained fluid, transparent and without alteration as long as the temperature remained constant; upon raising it to about 350° C. there was a slight ebullition followed instantly by a loud explosion, with light and smoke, similar to that of gunpowder. As before, there was a slight residue of alkaline carbonates. The same result followed when a substance in ignition without flame was plunged into the liquid at 300° C.

If the melted mixture be poured upon a cold surface a white substance is obtained, which is hard, brittle, rather hygroscopic, more fusible than nitrate of potash, and being melted explodes violently. In the solid form it does not burn when placed in contact with an ignited body; but reduced to fine powder, it deflagrates violently upon the application of a flame.

The explosive properties of the mixture are only developed when the nitrate of potash and acetate of soda are present in certain pro-

* Journal de Pharmácie et de Chimie, xvi, 333.

portions—from 50 to 100 parts of the acetate to 100 parts of the nitrate—the most explosible mixture being 100 parts of the fused nitrate to 60 parts of the fused acetate. When the nitrate is in excess, the combustion is only partial and of short duration: when the acetate is in excess, the mixture burns slowly and similarly to a light wood.

A mixture of nitrate of soda and acetate of potash was found to have the same explosive properties, but to be more hygroscopic. Mixtures of nitrate of potash with the acetates of copper and baryta did not yield an explosive product.—*Pharm. Journ. and Trans. Jan.* 11, 1873.

Varieties.

Croton Chloral in Painful Affections of the Fifth Nerve.—It is perhaps surprising that a remedy whose action was several months ago declared to be of so extraordinary a character should have received so little attention at the hands of the profession, especially when this new medicine promised to be so efficient a weapon against some of the most painful diseases known to physicians. Beyond one or two pharmacological notices, the substance seems to have been altogether passed by.

The hydrate of croton chloral was made by Krämer and Pinner, by the action of alkalies upon dichlorallyl and formic acid. Its physiological action was investigated by O. Liebreich. He found that in animals it produced a deep anæsthesia of the head, without any loss of sensibility of the body. Death was caused by a paralysis of the medulla oblongata. In man, an anæsthesia of the fifth nerve only was noticed. The sensibility of the trunk, and the pulse and respiration, remained unaltered.

Having procured some of this substance, I determined to make observations upon such of my patients at St. Bartholomew's as appeared likely to be benefited by the use of the medicine. I gave it to about twenty persons, nearly all women. They varied in age from seventeen to forty-four. They were all suffering pains in the regions supplied by the fifth nerve,—that is the upper and lower jaw, the face, and the supra-orbital region of the forehead. The pains were paroxysmal. In the majority of the cases they were increased at night. In nearly every one of these cases there were caries of the teeth. In about half there were signs of anæmia. The medicine was given in doses of five, ten and twenty grains, dissolved in water. It was given at night, just before going to bed. In one case, where the pains became aggravated at noon and at bedtime, it was given just before the increase of pain was expected. In all the patients, except two, great relief from pain followed the dose of croton chloral. Some of the patients said that they slept well after it; others, that they did not

sleep, but that the pains in the head and face either ceased altogether, or were much diminished. In two cases, both women, the croton chloral was of no use whatever, the pains being aggravated during the use of the medicine; but in the rest of the cases more or less relief was given.

Should the croton chloral be as efficient in the hands of others as it has been in mine, it will prove a most important addition to the materia medica. It will enable the physician to give relief from pain until relief can be afforded by the dentist, or by attention to the general health, and this without any of the general effects of narcotics. It is almost unnecessary to dwell further upon the advantage of possessing such a means.—D. J. W. Legg —*Dental Cosmos, Feb.*, 1873, from *The Lancet.*

Case of Poisoning by Aconite Treated by Digitalis: Recovery.—By William Dobie, L.R.C.S. and P.E., Keighley.—I was requested one morning, between 12 and 1 A.M., to visit a veteran surgeon who was supposed to have taken poison. The place where he lodged was scarcely a hundred yards from my house, and only a few minutes elapsed before I saw the patient. He was stupidly drunk in bed, and unable satisfactorily to answer questions. His landlady, however, informed me that he returned home the worse for drink about midnight; that he went direct to his surgery, took out a bottle of medicine, and went up stairs to bed; that shortly afterwards he rang the bell, and said he had taken a large dose of poison, which was certain in a short time to prove fatal. There was a two-ounce bottle, with its lable defaced, lying by the bedside. The bottle contained about half a drachm of a brown-colored liquid, a portion of which I applied to my tongue, and was satisfied, by the characteristic tingling induced, that it was aconite. Up to this time there were no symptoms of the patient having taken poison. There had been no vomiting, the breathing was natural, the pulse of fair volume and strength, and the extremities were warm. An emetic was prescribed; and, in conjunction with my late partner, Dr. Ramsay, I visited the man again in less than half an hour. By this time he had vomited freely; a considerable discharge had also taken place from the bowels; there was evidence, too, of failing circulation; the pulse was rapid and feeble, and the feet and hands were getting cold. The use of stimulants was clearly indicated; and, in order to give ammonia and brandy, we raised the patient's head. This brought on alarming prostration; the breathing became labored; the pulse, at the wrist, irregular, intermittent, and finally imperceptible; there was a quantity of frothy mucus discharged from the mouth and nostrils; the skin became dusky; a cold clammy sweat bedewed the face and forehead: in a word, the patient was dying. We quickly replaced his head upon the pillow, and, as he was unable to swallow, injected subcutaneously twenty minims of tincture of digitalis, and then applied galvanism to the cardiac region, and continued its use for about twenty minutes, at the end of which period the patient began to rally, and in a few minutes more was able to swallow a mixture of ammonia, brandy, and a teaspoonful of tincture of digitalis. Marked improvement followed the administration of the mixture, and it was twice repeated within an hour, by which time the breathing had become easy, and the circulation re-es-

tablished. We remained with him about half an hour longer, and, before leaving, gave him a cup of strong coffee, which, however, was vomited. I saw the patient again the following morning, when he expressed his surprise at being alive, as he had taken, he said, an ounce of Fleming's tincture of aconite.—*British Med. Jour., Dec.* 21, 1872.

Abortive Treatment of Boils and Felons.—We find quoted from the *Giorn. dell Acad. Med. di Torino* the following method of treating boils and felons, which Dr. Simon regards as almost infallible: Wherever the boil may be, and of whatever size, so long as suppuration has not commenced, rub it gently with the finger wet with camphorated alcohol, pressing especially on its centre. Do this half a minute at a time for seven or eight times, and then cover the part with camphorated olive oil. If one operation does not produce resolution, repeat it at intervals of six hours. A felon may be bathed ten minutes in camphorated alcohol, then dried and covered with the oil. The writer has never known a felon fail to succumb to three of these operations.—*N. Y. Med. Jour., Feb.*, 1873, from *Gaz. Med. Ital., Nov.*, 1872.

Phosphorescent Mixtures.—Phosphorescent tubes have been sold in France and Germany for several years, but the method of their preparation has not been divulged. Dr. Seelhorst, of Nuremburg, has been experimenting on the subject, and very considerately makes public the best way to secure mixtures that will afford all the colors of the rainbow, and are capable of use in imitations of flowers, insects and objects of natural history. After the powders are prepared they can be stirred into melted paraffin; and, by means of a brush, any pattern or design may be put upon glass. By protecting the glass in a frame the powder will retain the property of glowing for a year or more. The putting of phosphorescent mixtures upon glass in the form of flowers is capable of very beautiful application, and is one that has not been very extensively practised. With proper care and study, a landscape could be drawn on glass which, after exposure to sunlight, would shine in the dark and form a picture of considerable duration. The use of the paraffin is to protect the powders from the action of moisture and prevent decomposition. As a general rule, it is better to hermetically seal the mixtures in flat bottles, when they will retain their good properties for years. The following colors can be obtained very readily:

Green.—Hyposulphite of strontia, heated for fifteen minutes over a Berzelius lamp and for five minutes over a blast lamp till it is fused, yields a yellowish-green color after exposure to sunlight. The same color can be obtained by taking equal parts of carbonate of strontia and *lac sulphuris*, heat gently for 5 minutes, then strongly for 25 minutes over a Bunsen burner, and finally five minutes over a blast. It is granular and yields a fine green color, darker than the preceding.

Blue.—Sulphate of strontia is prepared by precipitating with sulphuric acid from chloride of strontium; the precipitate is dried, heated in a current of

hydrogen gas, then over a Bunsen burner for 10 minutes and for 15 to 20 minutes over a blast lamp. The product sometimes yields a yellow phosphorescent light, and when this is the case, it is necessary to give it another turn over the blast lamp.

Yellow.—Sulphate of baryta 6 parts, charcoal 1 part, fused over a blast lamp, at first afforded no light, but after 24 hours gave an orange-yellow light.

It may not be generally known that magnesium light will suffice to bring out all the effects of phosphorescence nearly as well as sunlight.—*Sci. Amer., Feb.* 22, 1873.

Analysis of Commercial Red Phosphorus.—The red phosphorus of commerce, as a rule, is not perfectly pure. It frequently contains more or less ordinary phosphorus, and as this gradually oxidizes in the air, varying quantities of phosphorus and phosphoric acids are formed, which give the commercial article an acid reaction and moist appearance.

The determination of these oxidation products offers no special difficulty, but the separation and determination of the ordinary phosphorus is much less easy, and a series of experiments were necessary in order to discover a good method for determining all the constituents of commercial red phosphorus. Drs. Fresenius and Luck have instituted such a series of experiments and published the method of analysis chosen by them.

The red and ordinary (yellow) phosphorus were both oxidized and determined as pyrophosphate of magnesia. The red and yellow phosphorus were next separated by the bisulphide of carbon, and the weight of the former found. Subtracting the weight of the red phosphorus from the total amount of phosphorus found above, gives the amount of yellow phosphorus. As a check on this, the yellow phosphorus in the bisulphide solution is oxidized with iodine and then converted into pyrophosphate of magnesia.

The following is the average of two analyses:

	Per cent.
Total phosphorus,	93·30
Yellow phosphorus,	0·56
Red phosphorus,	92·63
Phosphorous acid.	1·308
Phosphoric acid,	0·880
Water and impurities,	4·622

—*Journ. Applied Chem., Jan.*, 1873.

Action of Ether upon Iodides—Dr. J. E. de Vry—The author states, in reference to an observation made by Ferrières concerning the decomposition of iodides by ether, that several years ago he tried a similar experiment leading to the same result; but when the ether of commerce was first thoroughly shaken up with a concentrated solution of sulphate of protoxide of iron, and next with milk of lime, and then rectified by distillation, *no* action of the ether upon the iodides was observed. The author further observed that, while he resided in Java, he always ordered the ether sent to him from Europe to be rec-

tified in the manner just described, because so treated it remains perfectly pure and without any action upon iodides even in that warm climate, provided the bottles containing it were well stoppered and kept quite full.—*Chem. News, Jan. 10th*, 1873, from *Journ. de Pharm. et de Chim., Dec.*, 1872.

Artificial Ivory.—William A. Welling's patent for the manufacture of artificial ivory, has lately been extended by the Commissioner of Patents for seven years. The article is composed of 10 ounces of white shellac, 4½ ounces of acetate of lead, 8 ounces of ivory dust, and 5 ounces of camphor. The ingredients are reduced to powder, heated, and mixed; then pressed in heated moulds into sheets or other desired forms.—*Canad. Pharm. Journ., Jan.*, 1873, from. *Amer. Chemist.*

Furniture Polish.—Scrape one pound of beeswax into shavings in a pan; add half a gallon spirits of turpentine, and one pint linseed oil. Let it remain twelve hours, then stir it well with a stick, into a liquid; while stirring, add one quarter pound shellac varnish and one ounce alkanet root. Put this mixture into a gallon jar, and stand it before the fire, or in an oven, for a week (to keep it just warm), shake it up three or four times a day. Then strain it through a hair sieve and bottle it. Pour about a teaspoonful on a wad of baize, go lightly over the face and other parts of mahogany furniture, then rub briskly with a similar wad dry, and in three minutes it will produce a dark brilliant polish unequalled. Another preparation may be made as follows: Make a mixture of three parts linseed oil and one part of spirits of turpentine. It not only covers the disfigured surface, but restores wood to its original color, and leaves a lustre upon the surface. Put on with a woollen cloth, and when dry rub with woollen.—*Canad. Pharm. Journ. Jan.*, 1873.

Ground Nuts or Pea Nuts.—There is hardly an article of American production, of apparently so little note, that has grown so rapidly in importance as the pea nut. There are fully 550,000 bushels sold annually in the city of New York alone. Previous to 1860, the total product of the United States did not amount to more than 150,000 bushels, and of this total, full five-sixths were from North Carolina. Now North Carolina produces 125,000 bushels; Virginia, 300,000 bushels; Tennessee, 50,000 bushels; Georgia and South Carolina, each 25,000 bushels; while from Africa come about 100,000 bushels a year. What is done with all these pea nuts? In this country they are eaten, and sent all over the land, from Maine to Oregon for this purpose. The demand is greater than the supply. In France they are used for making oil, which is by many considered to be superior to the best olive oil for salad purposes. In the Southern States during the war, it was so used. The oil made was also used as a lubricator, and as a substitute for lard, while the cake residuum was ground, roasted, and sold as a substitute for coffee. At present pea nuts are not used in this country for oil, the price being too high. Thus it will be seen that their uses are extensive and varied, and that the crop which now yields over $2,250,000, and which did not add to the commerce of the country more than $200,000 ten

years ago, is at least not unworthy of note. Pea nuts vary with the soil upon which they are grown. The yield per acre averages 40 bushels, especially near Wilmington, N. C. They are therefore a better crop at $1.50 a bushel than cotton at 15 cents a pound. Much land, however, which will grow cotton well, will not grow pea nuts to the same extent. It is by many considered best to be near the sea, and very essential to have lime in the soil, or to manure with marl. As with many other products, pea nuts have been materially enhanced in value, and their production economized by modern inventions. For years before the war, the old-fashioned oriental style of threshing with a flail, and winnowing by throwing up in the air, was the universal custom. Both were overcome by the skill and talent of an ingenious mechanic of Wilmington, Mr. Thos. L. Colville, now deceased. When the war commenced, the great demand for oil urged the necessity of using pea nuts for this purpose; but how could the hull be got off? The same mechanic overcame this difficulty. There is something surprising in the extent of the edible capacity of our American nation, for this one little article of, we may say, fancy diet. Who eats them? Ask the owner of that little sign, "Pea nuts fresh roasted every five minutes," and he will tell you "Everybody," from the wealthy banker to the homeless newsboy; and that his own sales are over a thousand bushels a year.—*H. E. Coltonin, Journal of Applied Science.*

On the Transformation of Albuminoid Material into Urea—M. E. Ritter.—M. Ritter has repeated the experiments of M. Béchamp with success, and exhibited to the Society crystals of urea, of oxalate and of nitrate of urea. He thinks he has discovered the cause of the failure of M. Loew, in the following. At a certain moment, the transformation, which has hitherto been slow, becomes active, thereby occasioning an increase of heat; it is necessary then to stop heating and even to add a little cold water, otherwise there is a very abundant disengagement of carbonic acid and ammonia, and no crystals are obtained. After a half hour the heating may be resumed, without fear.—*Amer. Chemist, Nov.*, 1872, from *Bull. Soc. chim. Paris.*

On the Presence of Milk Sugar in a Vegetable Juice—M. Bouchardat.—M. Bouchardat has analyzed saccharine matter obtained from the juice of the sapitillier (Achras sapota), and has found it to consist of

Fermentable sugar, Cane sugar, ...	55
Milk sugar, ...	45

This is the first well established proof of the existence of milk sugar in a substance of vegetable origin.—*Ibid.*

Minutes of the Pharmaceutical Meetings.

A pharmaceutical meeting was held February 18th, 1873, Samuel S. Bunting in the chair.

The minutes of the last meeting were read and approved.

Mr. Shinn said that, at the meeting held in December last,* reference was made to a preparation, somewhat in demand in this city, containing fifty per cent. of cod-liver oil and a certain amount of lacto-phosphate of lime. Many experiments, before and since that time, have been made by him to devise an eligible method of combining these remedies in a palatable form, resulting in the following formula, made to contain twelve grains lacto-phosphate of lime to the ounce:

Take of Cod liver Oil, . . .		Oj,
Oil of Bitter Almonds, . .		
" Peppermint, . .		
" Wintergreen, . .	each	gtt. x,
Powd. Gum Arabic, . .		℥iv,
" Sugar, . . .		℥vi,
Solution of Lacto-phosph. Lime,		(℥i to f℥i) f℥viss,
Lime Water, . . .		f℥viss.

Mix the gum and sugar in a capacious mortar, and make a smooth mucilage with the lime water and three ounces of the solution of lacto-phosphate of lime. Add the volatile oils to the cod-liver oil, and gradually triturate them with the mucilage until a perfect emulsion is formed. Finally, add the rest of the solution of lacto-phosphate of lime, and mix thoroughly.

The solution of lacto-phosphate of lime is made as proposed by Mr. Neergaard in the Am. Journal of Pharmacy, June, 1871, by saturating a solution of lactic acid with freshly precipitated phosphate of lime.

The magma obtained from 16 ounces of phosphate of lime dissolved in muriatic acid, precipitated by ammonia, quickly washed and pressed, will be sufficient to saturate a pound of the commercial acid mixed with 4 pints of water. After filtering the solution it is assayed by evaporating a fluidounce to dryness and weighing the resulting lacto-phosphate of lime, when it can be made of a definite strength. In the formula given it contains 60 grains to the fluidounce, which is about equal to 30 grains of phosphate of lime, and is of convenient strength. It has a slightly acid taste, which, however, is not unpleasant, but rather renders the emulsion less cloying than if entirely sweet. As made by the formula, the preparation will keep in good condition for two or three weeks, but will eventually spoil, as shown by the blowing out of the stopper, although the taste and character are not materially altered.

If meant for sale to the trade the addition of about 20 per cent. of alcohol renders it more permanent, and in most cases may not be therapeutically objectionable.

This led to some remarks upon the preparation, during which Mr. Chiles gave his formula (which is published on page 105 of the present number). The question of the legality of selling the preparation was discussed, there being a patent for the manufacture of a similar compound.

Mr. Chiles stated that he also prepared a lozenge of lacto-phosphate of lime and pepsin.

Then adjourned.

Clemmons Parrish, *Registrar.*

* See January number, page 42.

Pharmaceutical Colleges and Associations.

COMMENCEMENTS.—We have been informed that the commencement of the New York College of Pharmacy will take place at Association Hall, on Monday evening, March 31st; that of the Philadelphia College of Pharmacy on Tuesday evening, March 18th, at the American Academy of Music; and that of the Maryland College of Pharmacy on Thursday afternoon, March 11th. The valedictory address will be delivered in Philadelphia by Professor Dr. R. Bridges.

PHILADELPHIA COLLEGE OF PHARMACY.—The following gentlemen have been elected to serve as Examining Committee: Prof. William Procter, Jr., W. J. Jenks, W. B. Webb, Jos. R. Remington and William McIntyre.

The arrangements for the commencement have been entrusted to a committee, consisting of Messrs. W. C. Bakes, J. T. Shinn and A. B. Taylor; by referring to the notice found on the inside page of the cover, it will be observed that members of the College, owing to the large graduating class, have been limited to two reserved seats, tickets for which must be called for before March 12.

During the session just closed, the following matriculants in the College have availed themselves of the instruction in the laboratory:

S. D. Addis, Pa.	Frank Harper, Ind.	F. Radefeld, Pa.
Edmund Backhaus, O.	W. L. Harrison, Va.	G. M. Russell, Pa.
E. C. Batchelor, Miss.	Herman Haupt, Pa.	Henry Schmidt, O.
Jacob Baur, Ind.	G. S. Henry, Pa.	Chas. Schnabel, N.Y.
N. J. Bayard, Ga.	T. C. Hilton, Pa.	A. E. Smith, Va.
J. A. Bowers, Ind.	W. H. Hubbard, Ill.	C. P. Smith, Pa.
Chas. S. Brown, Miss.	W. N. Janvier, O.	O. L. Smith, Ga.
J. N. Coffee, Ky.	J. M, Jones, Pa.	S. B. Spence, Wis.
A. Conrath, Wis.	W. Keir, M. D., Prince	T. A. Stevens,
E. S. Dawson, N.Y.	Edward's Isl.	A. F. Stifel, W. Va.
H. T. Eberle, Wis.	F. J. Koch, Ia.	W. W. Swearingen, Ill.
J. H. Flint, Cal.	S. C. Lee, Pa.	I. P. Van Cise, Ia.
A. S. French, N.Y.	R. V. Mattison, Pa.	W. G. White, Ky.
W. C. Gill, Pa.	J. O. McPherson, Ga.	F. P. Yergin, O.
A. G. Griggs, Ill.	St. Neppach, Wis.	
E. Z. Gross, Pa.	Chr. Petzelt, Pa.	

Since December last, Prof. J. Reese, M. D., of the University of Pennsylvania, at the invitation of the Board of Trustees, delivered a course of lectures on "Toxicology," to such students of this College, and others who chose to avail themselves of this opportunity of acquiring a knowledge of the action of poisons, the post-mortem appearance of the body, and the detection of the poisonous articles. The lectures, which were well illustrated, were attended by a class numbering about fifty.

NEW YORK COLLEGE OF PHARMACY.—At a conversational meeting held February 13th, Dr. E. R. Squibb delivered a lecture on "The New United States Pharmacopœia."

The New Jersey Pharmaceutical Association held its annual meeting on February 5th, at the State Capital. We understand that Dr. Nichols, the efficient President for the past year, declined a re election, and that Mr. James Stratton, of Bordentown, was elected in his place. We regret that a report on the proceedings, which was promised us, has not been sent.

Maryland College of Pharmacy.—At the stated meeting held February 13th, it was resolved to hold the annual meeting on March 13th, to be followed by a supper at the Rennert House. The Committee on the Pharmacopœia was instructed to report on the additions and changes in the new pharmacopœia, and to suggest a time for its general adoption by the members with a view to informing the medical profession of the fact. Dr. J. B. Baxley read an essay on Citrine Ointment, exhibiting samples made with various fats.

The Saginaw Valley Pharmaceutical Association, at its annual meeting held in January last, elected the following officers for the current year:

S. S Garrigues, Ph. D., E. Saginaw, President; L. Simoneau, E. Saginaw, Vice-President; J. F. Street, Bay City, Secretary; W. Moll, Saginaw City, Treasurer; T. Collins, E. Saginaw, and G. Aldridge, Bay City, Finance Committee.

At a subsequent meeting, the Rhode Island law, to regulate the sale of medicines and poisons, was considered and altered, in some respects, with the view of submitting it to the Legislature of Michigan for adoption. There appears to be a fair prospect of its passing.

The Tennessee College of Pharmacy has called a meeting of the pharmacists and druggists of the State, to assemble in Nashville, on Wednesday, 14th of May next, to take into consideration "the best means to secure the enactment of laws regulating the drug business in our State; to encourage proper relations between druggists, pharmaceutists, physicians and the people at large, which shall promote the public welfare and tend to mutual strength and advantage; to improve the science and art of pharmacy, suppress empiricism, and to gradually restrict the dispensing of medicines to educated pharmacists."

Those who are unable to attend, are requested to send their views in writing to the Secretary, Mr. Jos. J. Hall.

We sincerely wish that they may be successful in their laudable endeavors to improve the science and art of Pharmacy, and to secure to the public greater security in the dispensing of medicines, and that the meeting may be a large and influential one, since half-fare can be secured to Nashville during the month of May to attend the Industrial Exposition.

Pharmaceutical Society of Great Britain.—At the pharmaceutical meeting held February 5th, many donations were made to the library and museum.

Professor Attfield exhibited some syrup of iodide of iron, containing iodide of lead crystallized in golden spangles, and probably derived from the iodine, which had subsequently been found to be contaminated with lead. Mr. Williams had repeatedly observed iodide of lead in the syrup in question, which he

always traced to the iron filings employed, while the iodine was free from lead. Mr. Umney had likewise observed this contamination when crude iodine was employed, but never with resublimed iodine and iron wire.

Dr. Arthur Leared read an interesting paper on "Some drugs collected in Morocco," and exhibited many specimens. From the discussion we select the following remarks:—

"Mr. Hanbury said that Dr. Leared had referred to a seed extremely like that of *Peganum Harmala*, but black instead of brown. *Peganum Harmala* was a plant well known in the East, and its seeds possessed a remarkable property of affording, when digested in spirit, a green fluorescent solution. With regard to orris root, which, they were told, had lately come into the market from Morocco, he had the other day observed the curious fact that at the beginning of the present century price currents always used to contain both Florentine orris root and Barbary orris root. The Barbary orris root was entirely derived from *Iris germanica*, the common blue flag of our gardens. With regard to cumin we were told that it was used by the Jews in their bread, and also for flavoring pickled tunny fish. In the middle ages it was much used in Europe as a spice and a condiment. Dr. Leared had drawn attention to the remarkable fact of caraways being brought from Morocco. He (Mr. Hanbury) confessed that when he was shown Morocco caraway seeds in London some time ago, he hardly knew how to believe his eyes, for the caraway was essentially a northern plant, dwelling in Scandinavia and the colder parts of Europe. On looking, however, at Jackson's 'Morocco,' a work published at the beginning of the present century, he found that the author distinctly mentioned caraway seeds as an export of Morocco, and upon his (Mr. Hanbury's) sowing some of the Morocco caraway seeds last spring, he obtained a plant exceedingly like that of Europe. As to grains of paradise, it might be true, as stated by the people of Morocco, that their drug came from Europe, but it was a very curious fact that at Tripoli and the towns on the northern coast of Africa grains of paradise were still brought by caravans coming from Soudan and Timbuctoo, and from the tropical parts of Africa east of Sierra Leone. They were so brought in the middle ages, and shipped to the ports of Italy; and as they came from an unknown and remote region, and were much esteemed, they acquired their present name, the people supposing that no place but Paradise could produce anything so delightful. In subsequent times, when there was direct trade between Western Africa and Europe, grains of paradise were an article of very large import, being brought direct even to England and France. They were once in common use as a condiment for human food.

"Professor Bentley said that Mr. Hanbury had anticipated some of the remarks he had intended to make. He must say that, although he had come to the meeting fearing that the paper, being technical, would be uninteresting, he had found it quite the contrary, and had listened to it with great gain. Researches such as those of Dr. Leared were the only means by which they could get any historical knowledge of old remedies, or form an acquaintance with new ones. As to orris root, it was very interesting to find that it came in such large quantities from Mogador, in Morocco. Dr. Leared had referred to only one species of *zizyphus*, though there were several species known by the common name of jujube; but as to the so-called jujubes manufactured in London, it was quite understood that the juice or the fruit of the jujube plant did not enter into their composition. He was very sorry that the great fascination of partridge shooting had prevented Dr. Leared from seeing the ammoniacum plant, as he should have liked to have been informed of the mode in which it was obtained. Perhaps Dr. Leared might have heard from the natives whether the drug ammoniacum was obtained from the root, from the stem, or from both. In the museum there was a very interesting specimen of the stem of the Persian ammoniacum plant, with the ammoniacum *in situ*. That result had been

produced, not by incisions, but by the attacks of beetles or some creatures of the kind, in consequence of which the gum had exuded and covered the stem. The poisonous nature of *Spartium junceum* had been referred to in the paper. The Spanish broom had been examined by Dr. Stenhouse, who had found a new principle in it, and therefore, anything in connection with that subject was of interest. Of course, the drug was a strong diuretic. With regard to starch, no doubt it was present in plants allied to the arum, and could probably be obtained in large quantities from the large corms and underground stems without much difficulty. He apprehended that the poisonous quality was got rid of not so much by washing as by a certain amount of temperature that was employed in the preparation of the substance.

"Mr. Collins said that there seemed to be two kinds of 'harmala' seed, and both seemed to have had that name at first. Those of *Peganum harmala* he had compared with a herbarium specimen. The other was certainly those of a rutaceous plant, but whether it was a variety of *Peganum harmala*, he (Mr. Collins) could not say. He did not see in the Herbarium of the British Museum any specimen which showed a variation in the seed between those two. With regard to argan, he could not help wondering why the oil had not been introduced into this country. Sir William Hooker, in the 'Journal of Botany,' gave a very good account of it, and it had been very highly spoken of. As to Tacout galls, they were very small, and they did not seem to be equal to the Morea galls The latter were introduced to commerce some time ago, but from inquiry which he had made, he found that they were not considered good enough to be sent. The dealers said that when the galls were very small they did not like them, because they were very often mixed with foreign substances. With regard to *euphorbium*, it would have been very interesting if the plant from Kew had been sent to the meeting, because it had now, through the researches of Dr. Cosson,* some historical interest. It would be remembered that Dr. Berg some time ago made an examination of certain parts of the stems found in the specimens, and he gave it the name of *Euphorbium resinifera*. Dr. Cosson having examined specimens which he received from Mr. Hanbury and others, said that he believed that Dr. Berg was correct. Dr. Hooker in the meantime had obtained a plant from Mr. Cartensen, and this was now growing. The only matter to be cleared, and to make one sure that it was this species which yielded the gum euphorbium, was the flowering of the specimen. That event would prove whether Dr. Berg and Dr. Cosson were correct."

Professor Redwood stated that a reprint of the British Pharmacopœia would again be required very shortly, and referred to some alterations and additions which would then become necessary, it is not proposed to issue a new edition, but merely a supplement and appendix with the present pharmacopœia.

Editorial Department.

Professor Oscar Oldberg's address before the National College of Pharmacy was the subject of some editorial comments in our last number. The printed copy sent us being prefixed by a quotation from our remarks published in November, we deemed the address written with especial reference thereto, and therefore regarded it as reflecting upon the motives which prompted the first notice. In this we are glad to say we have been mistaken. Professor Oldberg writes that "not a word of your quotation was, either imputatively or

* Pharm. Journ. [3], vol. iii, 1049.

otherwise, aimed at you." Regretting that we interpreted his words in a different manner than intended by him, it is but just that we should give the entire passage verbatim to which we had taken special exception. It follows immediately after the quotation on page 92:

It is, indeed, our duty (no less than our privilege) to profit by the sneers of the uncharitable, and so manage that, in the future, all our institutions may partake of the nationalism of the city itself. They must not—nay, *cannot* be sectional to succeed. And to say that the people of the District of Columbia do not appreciate their privilege in this respect is an accusation much too jejune to be made in earnest.

After this correction in the bearing of the foregoing, we find also the sentence, immediately following, of an appropriate character, which at first we could not discern:

Thus it is eminently proper that the National College of Pharmacy, situated at the National Capital, should make bold to compete with its older sisters *without a churlish thought of unworthy contention.*

The New Pharmacopœia—Correction.—In some copies of the new Pharmacopœia will be found two errors, which originated in compiling and transcribing the manuscript for the printer, and were overlooked in proof-reading. As soon as discovered the necessary typical corrections have been made. We call the attention of our readers to the same, that they may be enabled to make the requisite alterations in case they should have a copy issued before the errors were discovered.

In the article "Pyroxylon" the quantity of sulphuric acid in the alternative formula on page 262 should be *ten*, instead of two troyounces.

In the formula for "Spiritus chloroformi," on page 275, twelve fluidounces of *alcohol* (not diluted alcohol) should be used.

Bay Rum.—Our attention has been directed to the two formulas for bay rum which, on page 95 of our last issue, we copied from "The Chemist's and Druggist's Diary." Both formulas were contributed to the "Druggists' Circular" in 1869, and will be found on pages 185 and 199 of that paper. One of the formulas has been copied incorrectly into the "Diary," and from it into our last number. Instead of ½ lb. cardamom, it should read Sem. Amomi (i. e. Pimenta) ½ lb.

Elixirs and Secret Formulas.—For several years past pharmacists have been annoyed by the continued introduction of new elixirs, medicated wines and similar preparations, ostensibly gotten up for the purpose of exhibiting nauseous medicines in a form which should be at once pleasing to the eye and agreeable to the taste. The baneful effects of this class of preparations have, we believe, never been more justly and more forcibly stated than by Dr. Squibb, at the Cleveland meeting of the American Pharmaceutical Association, who, after alluding to the inducement of large profits held out by the manufacturer to the dispenser, said:*

* Proceedings of the American Pharmaceutical Association, 1872, p. 80.

"Physicians are liable enough to go on the ready-made clothing store principle; they will take anything that is compounded and save themselves the trouble of compounding; but while I am speaking of a large class of physicians, fortunately there is another class, and to those pharmacists would do well to address themselves. There are no two patients whose conditions are right for the same preparation of these elixirs, and therefore it is really a ready-made clothing system; when you put a definite portion of strychnia, cinchona and iron into a preparation, you foreshadow a case which requires exactly that preparation. Some require no iron, some a little more strychnia, some no cinchona, and so the physician puts a good many shot into his gun, or is induced to do so by drummers, in the hope of hitting something somewhere. The result of this is, it has become reduced to what is a little better than fashionable tippling. It is a fashionable way of getting stimulants into the stomachs of women and children, and as such it deserves the serious reprobation of this Association. There is no way we can do more good, and place it in a better position with physicians and the community at large, than by setting our faces against this elixir swindle, as it is properly called."

The danger likely to result to pharmacy from the wholesale introduction of these preparations, was recognized at an early day, and various ways were adopted, individually, by the conscientious pharmacists, either to avoid their dispensing altogether, or to dissuade physicians from prescribing preparations the formula of which was not made known to such an extent that they could be made alike by all pharmacists. Several local pharmaceutical societies then took the matter in hand, and published and adopted formularies for the guidance of their members and others who chose to avail themselves of the information given. The formulas of these societies for the same preparation, however, rarely, if ever, agreed, and the variation in the nature of the products as obtained from different pharmacies, was therefore not removed. In 1871,* Dr. E. W. Russell, of Baltimore, suggested that the American Pharmaceutical Association should select and adopt the most satisfactory formulas, either for adoption in the new pharmacopœia, or to recommend their general use by the pharmaceutical and medical professions throughout the country.

Large bodies proverbially move slowly, and the subject being of vital importance to two kindred professions of this continent, the National Association referred to Mr. Robert J. Brown, of Leavenworth, the following query: "Are there reasons sufficient to warrant this Association in propounding formulas for unofficinal preparations with a view to securing uniformity in dispensing?" which, at the last meeting, was answered† in an able paper, the concluding remarks of which are as follows:

"We believe the time has come when these preparations should be prepared by every pharmacist. If this Association will take a forward step in the publication of the best formulas that can be obtained, we believe there are thousands of apothecaries who will throw aside A., B. and C.'s preparations, and prepare them after the formulas propounded by this Association, rejoicing that they are free from the odium of dispensing semi-nostrums, and the American Pharmaceutical Association will continue in its good work of disseminating useful information to American pharmacists."

The reading of this paper gave rise to an interesting discussion, from which we quoted above only a portion of Dr. Squibb's remarks, but which touched

* See American Journal of Pharmacy, 1871, p. 381.

† Proceedings of the American Pharmaceutical Association, 1872, p. 207.

upon several other important and interesting points connected with this question. At a subsequent session the Association passed the following resolution:

Resolved, That a committee of five be appointed by the President, to take into consideration the subject of elixirs and similar unofficinal preparations, in all its bearings upon pharmacy, and, if deemed proper, to report suitable formulas for the guidance of the members of this Association.

And the President appointed the following committee to carry out the objects of the resolution: Messrs. John F. Hancock, Baltimore; James G. Steele, San Francisco; Hampden Osborne, Columbus, Miss.; Robert J. Brown, Leavenworth, and Ottmar Eberbach, Ann Arbor, Mich.

We regard this as an excellent choice, all the gentlemen having already devoted much time and labor on the subject, and among them, Mr. Eberbach having proven analytically, in an essay on the alkaloids contained in commercial elixirs, which was read at the Cleveland meeting,* that most of the elixirs examined by him fell more or less short, some by two-thirds the amount of these important constituents claimed by the manufacturers.

We have prepared the above sketch of the agitation against the private elixirs, etc., in consequence of the replies which we have received to the paper by Mr. J. W. Long, entitled "A defense of elixirs, etc.," which, with some editorial remarks, we published in our last number. Our correspondents will pardon us us for not publishing their essays in extenso, since all (five have been received thus far) agree in the main in their arguments against these modern species of nostrums, and advocate the adoption by the American Pharmaceutical Association of suitable formulas for all the more important elixirs and similar preparations which of late years have gained notoriety, and have been more or less extensively prescribed by physicians. Most of our correspondents seem to have overlooked the notice that the Association has taken proper steps in the direction indicated, which we published on page 444 of our last volume. In regard to the appointment of a similar committee by the American Medical Association, to act in conjunction with that of the Pharmaceutical Association—a suggestion made in two or three of the papers received—we must say that such a committee might materially lighten the labors of the pharmacists by indicating the most suitable proportions of the active ingredients in the formulas to be proposed and adopted; we suppose, however, that the American Pharmaceutical Association will take proper steps to make the medical profession of the country acquainted with whatever action it may take in this matter, so as to secure uniformity in these preparations in all localities.

A suggestion made by Mr. William B. Addington, of Norfolk, Va., is worthy of consideration by all interested, namely, that "manufacturers whose elixirs, syrups, etc., are good, might show a little public spirit, and send in their formulas to this Committee for examination and selection. . . . Give to him, whose formulas are accepted, the credit on all occasions; and he who feels a pride in benefitting and elevating his profession, and not merely in making what pecuniary gain he can out of its members, will consider himself amply rewarded." Those who feel inclined to adopt this course can readily do so by communicating with any member of the Committee named above.

* Proc. Amer. Pharm. Assoc., 1872, 264—273.]

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Year-Book of Pharmacy, comprising Abstracts of Papers relating to Pharmacy, Materia Medica and Chemistry, contributed to British and Foreign Journals from July 1, 1871, to June 30, 1872. With the Transactions of the British Pharmaceutical Conference at the Ninth Annual Meeting, held at Brighton, August, 1872. London: John Churchill & Sons, 1872. 8vo, 676 pages, exclusive of advertisements.

This annual publication comes to us in its usual attractive style, its pages filled with matters of interest to the pharmacist. The first 400 pages are devoted to the "Year-Book," or, as it is termed by our national association, the "Report on the Progress of Pharmacy," which is introduced with a review —covering 12 pages—of the more important observations and discoveries made during the preceding year, relating directly or indirectly to pharmacy. This is followed by a review of the investigation on the various articles of materia medica, conveniently grouped together into natural orders.

Part II of the Year-Book treats of pharmaceutical chemistry, upon 172 pages; Part III of pharmacy, upon 101 pages, and Part IV contains, upon 20 pages, a number of notes and formulas, which could not conveniently be arranged in the preceding part.

The abstracts of the papers are very full and complete, and, as far as we have examined, cover pretty well the pharmaceutical literature of the year. In our opinion, the use of Parts II and III would be materially facilitated if they were subdivided by several headings, as has been done in Part I; the systematic arrangements which appear to have been adopted for the two parts would then become more obvious.

The Year Book is followed by the Constitution, &c., of the Conference, the alphabetical lists of members, and of the towns in which they reside. The roll shows 18 honorary, and altogether 2000 members, a number far surpassing that of the American Pharmaceutical Association, which latter has been organized more than double the length of time.

The Transactions of this body, including the reports and papers read at the meeting, occupy 188 pages. In the October number of 1872 we have given a short account of them, and several papers have been republished in this Journal.

Great credit is due to Mr, C. H. Wood, editor of the Year-Book, and Prof. Attfield, editor of the Transactions, for the labor bestowed upon this volume, not the least important feature of which is a complete and carefully prepared index of 26 pages, in double columns.

The Pharmacist and Chemical Record. A Monthly Journal of Pharmacy, Chemistry and the Collateral Sciences. Published by the Chicago College of Pharmacy, 1873. Price, $1.50 per year.

The January number of our contemporary comes to us enlarged from 24 to 32 pages each month. It remains under the editorship of Professor N. Gray Bartlett, with Mr. Albert E. Ebert, associate editor. We congratulate our Western friends on this evidence of success and prosperity.

OBITUARY.

Professor Dr. J. F. Hermann Ludwig died at Jena on the morning of Jan. 7th, in the fifty-fourth year of his age. In him pharmacy loses one of her most devoted and accomplished scholars, and one of her most conscientious and successful teachers For the following biographical notes we are indebted to the "Pharmaceutische Zeitung: Born at Greussen, Sondershausen, on the 12th of August, 1819, he served his apprenticeship there in the "eagle-pharmacy," and subsequently as assistant in various parts of Germany and Switzerland. In 1844 he went to Jena to study chemistry and pharmacy. In the following year he became the assistant in the pharmaceutical institute of the eminent Wackenroder, and in 1847 Professor of Agricultural Chemistry in the Agricultural Institute at Jena. In 1852 he habilitated himself as Lecturer in the University of Jena, and, after Wackenroder's death, in 1854, he succeeded his teacher as Director of the Pharmaceutical Institute, in which capacity he labored uninterruptedly until last winter, when he was prostrated by sickness, which terminated his useful career.

Since 1854 Professor Ludwig has been acting as Inspector of Pharmacies, and as a member of the State Board for Chemical and Pharmaceutical Affairs. When, in 1869, a pharmaceutical examining board was created at the University of Jena, Ludwig was appointed one of the members. Since 1860 he and Dr. Mirus conducted the chemico-legal investigations for the grand-duchy of Weimar and adjacent states, and, in conjunction with Prof. Reichardt, undertook the analysis of the springs of the larger towns of his state to determine their fitness for drinking and culinary purposes. His chemical and pharmaceutical researches were published in the "Archiv der Pharmacie," of which journal he was co-editor with the late Dr. L. Bley from 1863 to 1867, and was the sole editor since 1868. Of larger works, Prof. Ludwig published translations of A. Philippe's History of the Apothecaries, &c., and of Tardieu and Roussin's Toxicology, the latter work in connection with Dr. Thiele; and, together with Prof. Hallier, an edition of Clamor Marquart's Pharmacy.

As an earnest student, he accumulated valuable collections; but, overworked as he had been for years, with a compensation inadequate for his numerous responsible duties, he leaves a wife and four children in very moderate circumstances.

The deceased was an honorary member of the American Pharmaceutical Association, and a corresponding member of the Philadelphia College of Pharmacy.

George Waugh, a prominent member of the Pharmaceutical Society of Great Britain, died, at the age of 71 years, on the 12th of January, at his residence, Queensborough Terrace, Kensington Gardens. The deceased was for many years a member of the Council of that Society, and may be regarded the originator, as he has been one of the most active promoters, of the Jacob Bell Testimonial Fund.